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ABSTRACT

This workbook offers tips for staff development planners who train teachers about technology. The first six sections are "Getting Started with Competencies and Context," "Looking at Learner Needs," "Taking School Technology Inventory," "Outlining Parameters for Program Design," "Selecting Resources and Approaches," and "Resources and Approaches: An Overview of Options." The options described in the latter section include: audiotapes; conferences; consulting resources; digital disks (CD ROMs/laser videodiscs); interactive satellite network telecasts/videotapes; lesson plans; listservs; networked, computer-based resources; North Carolina Information Highway; observation and field trips; packaged workshops, seminars, and courses; parents and the community; peer mentors; professional development collection; students and teachers learning together; teachers teaching teachers (train the trainer); and videotapes. The last two sections are "Evaluating the Technology Training Program" and "Addressing Renewal, Registration, and Record Keeping Issues." The first two sections are, "Evaluating the Technology Training Program" and "Addressing Renewal, Registration, and Record Keeping Issues." More than half of the workbook includes the following 13 attachments: North Carolina Teacher Technology Competencies; local samples of training objectives, content, and parameters; a sample needs assessment form; a sample school technology inventory; the University of North Carolina Educational Consortia; the Regional Education Service Alliances/Consortia; Internet access options; a summary description of Eisenhower Year Eight Projects; featured sites and teachers in Star School Series: "Case Studies and Applications"; sample North Carolina Technology professional development programs; a Department of Public Instruction videotape loan library request form; guidelines for developing a professional collection; and a sample technology training program evaluation form. (SM)

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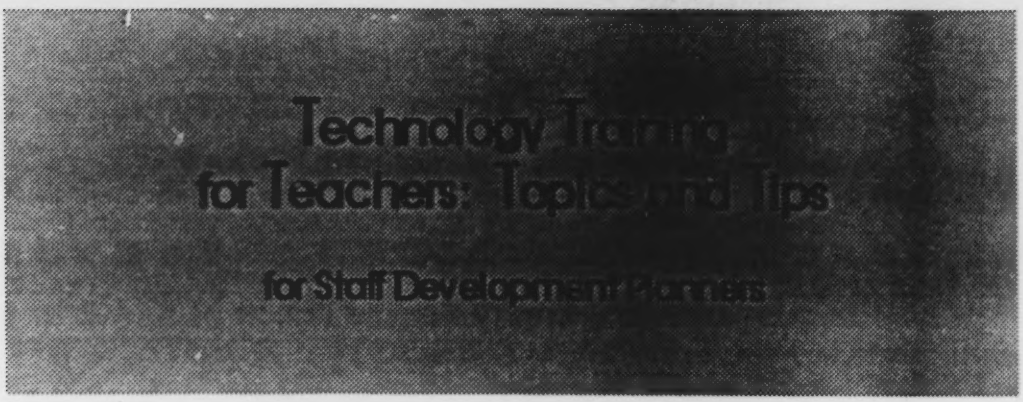

Instructional Technologies Division
Public Schools of North Carolina

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Topic: Getting Started with Competencies and Context

Question: Now that I have technology dollars for staff development, where do I begin planning effective technology training for teachers?

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1. Study the larger context for your work, including:
   - State and national technology competencies for teachers
   - School district and school technology plans (especially sections on staff development).
   - Related needs assessments and budgets.

   Attachment A provides an overview of technology competency work at the national, state, and local levels and a complete listing of North Carolina Technology Competencies for Educators.

2. Using information collected in step 1 above, develop materials, graphics, and forms that can help you outline and communicate guidelines and objectives of your training plan.

   Attachment B contains selected pages from local materials developed to communicate training plans and objectives.

3. Involve as many stakeholders as possible in your plans. Ask for input, raise awareness, and invite participation from school staff, students, parents, businesses, and the community. Each can contribute important forms of support for your efforts.

4. Establish connections early with staff development planners in other school districts, so you can benefit from the exchange of information.

Topic: Looking at Learner Needs

Question: How can I obtain helpful information about learner needs?

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1. Use needs assessments and checklists to build databases and spreadsheets that reveal all three of the following about prospective trainees:
   - What they need to know (to determine current knowledge and skill levels)
   - What they want to know (to determine interests)
   - How they would like to learn it (to help you address learning styles and scheduling needs).
2. Observe what others have done in this area and think through logistics. Here are a few questions and tips to keep in mind.
   - Is the survey clear and meaningful? For example, descriptor sets like "no experience, some experience, comfortable using" are more informative than numerical ratings of competency from 1 to 10.
   - Can the survey serve several purposes? For example, to identify who and how many teachers need general workshops on the same topic AND teachers who are interested in becoming trainers, develop instruments and select spreadsheet software that can provide both sets of information without duplication of effort.
   - Can information be efficiently collected and used? For example, if data will be used for more than one purpose—or by different staff—look carefully at the obstructions you can expect when hardware and software are incompatible, isolated, etc.

Attachment C contains selected pages from an instrument developed locally to assess learner needs.

Topic: Taking School Technology Inventory

Question: What technology is available to support the overall training program?

Develop formal or informal tools and strategies to determine what technology resources are available to support your training efforts. Then develop spreadsheets to assist your training plans. All of the following information can be helpful:

- The type, quantity, location, and capacities of **hardware**, including computers and peripherals, VCRs, camcorders, televisions, cameras, audio recorders, laser disk players, photocopiers, etc.
- School and school district **networking** and capacities for sharing data, video, and audio.
- Type and location of **software** and level of accessibility (governed by single license, lab pack, or network/site license).
- **People** who can play various supporting roles in implementing your plan—keeping technology up and running, consulting with teachers about integrating technology with instruction, developing training materials, delivering training, etc.
- Location and availability of **facilities**, rooms, spaces and places where staff development activities can occur.

Note: Consider not just the people and technology resources available for training sessions but also what will be accessible to teachers when they return to their classrooms.

Attachment D contains a sample School Technology Inventory Form that can be expanded and customized in the format needed to address all of the above items.

Topic: Outlining Parameters for Program Design

Question: What parameters need to be established to provide direction for program design?

---

1. Parameters will be unique to each school system, based on needs assessment results, stakeholder input, and the people and process who make staff development decisions in your district. The questions that follow are commonly identified with setting helpful parameters for training.

   - Will training be mandatory, voluntary, or both?
   - Who, besides teachers, will be trained—superintendents and principals, some school staff, or all school staff?
   - Who will be trained first and how will training progress to impact more and more teachers?
   - When will training will occur—within school hours, outside of school hours, or both?
   - Where will training occur—on site, off site, or both?
   - Will staff be compensated and/or provided incentives for completed training? If so, how?

   This section outlines some of the options related to each of these questions.

2. Whether parameters are established for five months or five years, document them (in training mission statements, objectives, and policy) and communicate them to stakeholders. Parameters established up front provide clear direction for program design, prevent misunderstandings, and enable you to move forward with clear and manageable goals.

3. When communicating parameters:
   - Be prepared to deal with resistance in a positive, nonthreatening way.
   - Make it clear that parameters (and the program) will inevitably change as needed to learn from mistakes, make improvements, and accommodate new priorities.

More About Program Parameters

- Will training be mandatory or voluntary?

  Advantages cited for voluntary training activities include greater impact and staying power for staff who are already motivated to learn. On the other hand, if all training activities are voluntary, staff with the greatest need for training may not receive it. Many school districts are therefore using a combination of the two approaches to benefit from each.

  - Some school districts use mandatory activities to provide overviews and introductions to training basics and to initiate registration.
  - Others launch their programs with voluntary fairs, picnics or complimentary luncheons to inform and motivate staff at all levels of knowledge and skill.
  - Another district may modify teacher contracts to include required out-of-school hours per month devoted to technology training functions or activities.

- Who, besides teachers, will be trained?

  Most school districts believe, and is now reflected in the North Carolina technology competencies, that some type of technology training for superintendents and principals is critical to the support and success of all other technology training. Many are including school counselors, office, and other personnel. Some are planning to provide some level of technology training to everyone in the school, including cafeteria and custodial staff. Indeed, in the context of the school as the center of the community, parents and other community groups are turning to the school for technology training.

- Who will receive training first?

  Most training plans, by necessity, progress in stages to gradually impact more and more teachers. Who is trained first depends upon the results of local needs assessments and local priorities.

- When will training occur?

  Demands on school staff and trainers' time make it difficult to schedule training, whether it is within or outside of school hours. Often it is more a matter of when it is possible, as opposed to when and how it would be most beneficial. However, realistic expectations regarding what and how much can be accomplished within particular blocks of time are essential. For example, many school district training plans give high priority to large blocks of time for hands on activities and practice.

  Working within these restraints, staff development planners are searching for creative strategies to make time for training. School districts are using a combination of strategies, including the following:

  - Provide technology training on specified in-service days, early release days, and designated Saturdays.
  - Pair up teachers to cover each other's classes as needed.
  - Employ well trained technology substitutes who work with mobile technology units and special lesson plans to accommodate multiple classes, subject areas, and grade levels while regular teachers attend training.
  - Develop release plans that use technology training activities to further other local goals. For example, a school or district that supports integrated planning across grade and subject areas, or perhaps peer mentoring programs, may plan technology training that brings particular groups of teachers together for technology training.
  - Provide in-depth training and practice sessions on Saturdays

- Where will training occur?

  While most staff development planners are making the most of whatever is available, many believe that **on site training** offers the following important advantages:

  - Is convenient for teachers and can utilize time and energy that would be experienced going elsewhere.
  - Provides the actual environment where teachers work to support current instructional objectives with available technology.
  - Provides flexibility for rescheduling and repeating training opportunities.
  - Increases communication and peer support within the school.

- Is conducive to developing lesson plans and other project-based products that can be shared among teachers.
- Provides opportunities to coordinate or combine student and teacher technology training.
- Makes it possible to involve other school staff who can help with the training (media coordinators, technology technicians, student assistants) and to coordinate the use of onsite materials (videotapes, books, journals, and other professional materials)—for training sessions AND ongoing support.

Off-site training occurs in many places, depending upon the location of resources, training delivery contracts, transportation, and scheduling considerations in your district. Following are some of the places being used for local technology training.

- Community colleges and universities
- Rented, donated, or school-district owned technology training centers. (These centers sometimes operate with equipment, software, and other technology donated or loaned by vendors and publishers—if they also serve as evaluation, review, and demonstration functions that benefit schools, vendors, and publishers.)
- Local satellite sites.

- Will teachers be compensated and/or provided incentives?

Some staff development planners believe that compensation helps staff take technology training efforts more seriously, while others believe that intrinsic motivation brings better results, because it reflects the "buy in" essential to substantive change. For many districts, this issue is similar to the mandatory vs. voluntary question: it doesn't have to be an either-or decision. You can benefit from by combining an array of incentives specific to various training functions and activities. Following are some traditional and not-so-traditional ways teachers are being encouraged to participate in technology training.

- Provide credit toward certification only.
- Provide credit toward certification and other forms of advancement or status within your school system.
- Provide pay with local or donated funds.

- Provide free laptop, software, video or digital camera, poster-and-banner makers, or other highly valued purchased or donated items. (These types of incentives are becoming very popular, especially for teachers who commit long hours to becoming technology trainers.)
- Provide a variety of purchased or donated goods or services as small bonuses for completing training or reaching specific competencies. This strategy also presents opportunities to build awareness and partnerships with the business community.

Note: Bonuses may be strictly for the classroom (free paperback book library, art and office supplies) or personal (free theater tickets and restaurant coupons, athletic equipment, mall gift certificates).

Attachment B contains locally developed materials with information about program parameters.

Topic: Selecting Resources and Approaches

Question: What criteria can help me select an effective combination of resources and approaches for training?

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1. Make sure the approaches and resources you select reflect characteristics fundamental to any successful adult training effort. Generally, the resources and approaches that earn a "YES" response to most or all of the following questions will probably deliver the characteristics and quality you need.

   a. Will they help the teacher acquire or strengthen basic or advanced technology competencies?

   b. Can teachers easily relate their experiences and needs to the information and activities being offered?

   c. Do the resources and approaches require substantive involvement and participation? Are they process-oriented, problem-centered, and/or project-based?

   d. Are the offerings engaging, interesting, entertaining?

   e. Do they provide a means for self-assessment to emphasize what has been accomplished and to determine where to go next?

   f. Are there strong mechanisms in place for ongoing follow-up assistance and support, during and after training?

2. Keep training focused on teacher roles, knowledge, and skills specific to project-based processes and outcomes in the technology-supported classroom. Students who are learning to access and use technology's tools and resources need a teacher who has the skills to establish and guide a largely self-directed classroom community that learns through well planned projects and is evaluated on a variety of outcomes .

What teachers know continues to be important—but not as critical as what they DO, and how they do it. Look for training resources and approaches that model and strengthen the teacher's capacity:

- To plan meaningful learning activities.
- To manage and evaluate resources tools, processes, and products.
- To communicate and interact effectively with students.

3. Offer as many options as possible for teachers to develop and strengthen each technology competency. More options make training more accessible for everyone and maximize the potential of your program to meet the individual needs of teachers. Consider the diversity of resources and approaches in this section, and how they can work together to address:
   - Different learning styles and multiple intelligences
   - Different levels of knowledge, skill, interest, and motivation.
   - The need to fit training into a variety of busy schedules.

Topic: Resources and Approaches: an Overview of Options

Question: What training options should I consider?

The alphabetized options overviews in this section are not all-inclusive or evaluated in depth. They are a sampling of possibilities that can be combined, based on your needs, to **offer accessible opportunities, provide ongoing support**, and **sustain many different teachers over time.**

Options Legend

Since scheduling around other school and teacher commitments and events is a significant challenge, resources that can be used by individual teachers—without scheduling and when the teacher wishes—are marked with the clock symbol The marking assumes that teachers will have the necessary equipment at home, in their classroom, or a lab that is open and accessible before and after school hours.

Audio Tapes

Comments	Contacts and Assistance
• Small and light for easy transport • Learners can listen while they drive. • Can be a helpful tool for presenting background information, introducing basic areas of knowledge and skill, and communicating ideas and strategies. • Can be purchased, borrowed, or custom-recorded for specific training purposes. • Provide no visual assistance for how-to's. However, high quality tapes that clearly describe processes can sometimes convey a mental picture that makes listening worthwhile.	• Explore the following sources for purchasing or borrowing tapes related to your training: - school media coordinators - software publishers - computer sales representatives - Information and Technology Evaluation Services, DPI (Phone: 919/715-4846)

Conferences

Comments	In-State Opportunities
• A good source for networking and learning about a variety of instruction and training approaches, array of available instructional resources. • May be difficult for teachers to be away from school for 1-4 days at a time. • Out-of-state conferences can be costly.	• NCETC (NC Educational Technology Conference) - Typically held in Greensboro, the week after Thanksgiving. • ECU (East Carolina Technology and Teaching Conference) - Typically held in Greenville in March. Call 919/757-6143 for more information. • NCAECT (NC Assoc. of Educational Communication and Technology) - Typically held in Charlotte or Research Triangle (alternating years) in February. • NCLA/NCASL (NC Library Association/NC Association of School Librarians) - Typically held in October with NCLA and NCASL alternating years. NCASL holds other workshops during NCLA year. Call 919/839-6252 for more information. • AASL (American Association of School Librarians) - held approximately every 2-3 years in major U.S. cities. Call 1-800-545-2433 for more information. National Opportunities • NECC (National Educational Computing Conference). Sponsored by ISTE, 1787 Agate St., Eugene, OR 97403; phone 541/346-2411; fax 541/346-5890; e-mail iste@oregon.uoregon.edu. http://isteonline.uoregon.edu.

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Consulting Resources

Comments	Contacts and Assistance
• Using a consultant enables one to target a specific audience, customize training, receive assistance specific to a particular need or problem. • Identifying a qualified consultant specific to your need can require time. • One should always consider available professional resources at institutions supporting K-12 education, which may have minimal to no charge in contrast to consultants in business for themselves or part of professional consulting firms. • If used for a workshop or presentation, a consultant's schedule is typically fixed, requiring teacher participation at the time of the presentation. (Generally, consultants are reluctant to have videotapes made of their presentations for later use.)	• UNC Educational Consortia 🗁 See Attachment E for complete list. • NC Regional Education Service Alliances/Consortia 🗁 See Attachment F for complete list. • Professional consultants in the Instructional Technologies Division, NCDPI, 919/715-1534 • SERVE P.O. Box 5367 Greensboro, NC 27435 (910) 334-3211 • SREB (Southern Regional Education Board) 592 Tenth Street, NW Atlanta, GA 30318-4790 (404) 875-9211

Digital Disks: CD ROMs/Laser Videodiscs

Comments	Contacts and Assistance
• Use can be time-independent • Equipment and discs can be expensive and may not be readily available.	Reference tools on available materials include: • *The Multimedia and Videodisc Compendium* from Emerging Technology Consultants, Inc., 2819 Hamline Ave. N., St. Paul, MN 55113, Tel.: 612/639-3973; Fax: 612/639-0110, 800/395-3973. • *InfoTech: The Advisory List* from Information Technology Evaluation Services, Public Schools of North Carolina, 301 N. Wilmington St., Raleigh, NC 27601-2825, Tel.: 919/715-5357. Provided free to all schools and teacher training institutions. One year subscriptions are available for $20 for others.

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Interactive Satellite Network Telecasts/Videotapes

Comments

- Offer a variety of staff development telecasts throughout the school year and are generally aired in late afternoon.
- Provide an interactive format to serve large numbers of teachers at once.
- Telecasts can be taped and used as needed to adapt to needs and schedules of individual teachers.
- May include rights to videotape (or order videotape of) the telecast, for use as needed.
- May include teacher and facilitator print materials.

For More Information

- StarNet
  1314 Hines Avenue
  San Antonio, Texas 78208
  Phone: 1-800-234-1245
- SERC
  P.O. Box 50,008
  Columbia, SC 29250
  Phone: 1-800-476-5001
  http://www.scsn.net/~serc
- North Carolina Distance Learning by Satellite Network. Uses StarNet receive equipment; videotapes of broadcasts are available through NCDPI Videotape Loan Library. Contact:

  NCDPI Distance Learning
  301 N. Wilmington St.
  Raleigh, NC 27601-2825
  Phone: 919/715-1544
  http://www.dpi.state.nc.us

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Interactive Satellite Network Telecasts/Videotapes (cont)

Comments	For More Information
The following networks are accessible to North Carolina school districts and offer technology-related staff development telecasts and /or instructional telecasts for students. • StarNet. Telecast available in at least one location per county. Targeted at educational needs in North Carolina. • SERC. As of March 1997, status of required satellite receive equipment in flux; limited installed base in NC. • All NC community college locations are equipped with steerable C/Ku analog dishes. Many of these locations are willing to accommodate special requests from local schools or systems.	• Education Satellite Network Clearinghouse. Missouri School Boards Association. 21001-70 Drive Southwest. Columbus, MI 65203. Phone: (314) 445-9920 Fax: (314) 445-9981. The Clearinghouse publishes Education SATLINK, a comprehensive satellite program guide and available for K-12 educators, and SATLINK OnLine, which provides electronic access to program and teleconference listings. • *"You're Having Company,"* a monthly summary of satellite programming readily accessible to NC schools, published by NCDPI Distance Learning and distributed to all central office staff development coordinators and StarNet site facilitators.

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Lesson Plans

Comments	Contacts and Assistance
• Considered critical to acquiring advanced technology competencies of integrating technology with instruction • May be custom-developed before or during training to align with curriculum. • Can be obtained from numerous Internet sources. • Can be shared and used throughout the school districts when training is complete.	• "Tried 'n' True" (TNT)- Lesson plans developed by NC teachers and available on *Teacher of the Year Homepage* http://www.ofps.dpi.state.nc.us/OFPS/Teacher_of_the_Year/TNT/ • LEARN North Carolina - A professional development and support program for NC teachers and administrators that helps transform K-12 instruction, delivery of instruction and learning. http://learnnc.iat.unc.edu/ or Institute for Academic Technology, 2525 Meridian Pkwy, Suite 400, Durham, NC 27713, 919/560-5031 • Elementary and middle school lesson plans developed using technologies presented on *"Using Technology Effectively: Case Studies and Applications,"* a Star School teleconference series. Contact: Distance Learning Systems, NCDPI, 919/715-1544. • Teachers' Idea & Information Exchange (TI&IE) - Commercial materials to support the NC Computer Skills Curriculum. P.O. Box 6229, Lincoln NE 68506. Phone: 402/483-6987.

LISTSERVS

Comments	Contacts and Assistance
• Good source for building a broad base of ongoing peer and professional support. • Can provide a wealth of information (lesson plans, strategies, and other materials and assistance), based on user interests and needs. • Accessible and interactive for timely response to ongoing needs. • Make sure instructions for subscribing and unsubscribing are clear. • Very active LISTSERVS may result in information overload and require frequent screening.	• For communication with other teachers participating in the Star School series, *"Using Technology Effectively"* and *"Speaking about Technology... Teachers Talking to Teachers,"* and on distance learning issues, address e-mail to: majordomo@lists.dpi.state.nc.us. In body of message type: subscribe starschool_l • For general communication with teachers, address e-mail to: majordomo@lists.dpi.state.nc.us In body of message type: subscribe TOY_L

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Networked, Computer-Based Resources

Comments	Contacts and Assistance
• With site license, material can be downloaded and used by large numbers of teachers, in small and large blocks of time, without leaving the classroom or school. This is a useful training strategy when no lab is in place in school. • If training is done on a group basis using downloaded material some means of communication is required between trainer and teachers. A telephone in each classroom, a roving facilitator, or other means of communication can be used. • Connecting to the Internet can be a rich source of resources. 🗁 See Attachment G for description of Internet access options.	• Randolph County Schools has successfully used a combination of networked closed circuit television and classroom computers to provide hands on training to teachers simultaneously in a school. Contact: Sue Spencer, Director of Media and Technology, Randolph Co. Schools, 2222-C S. Fayetteville St. Asheboro, NC 27203-7397, 910/318-6100.

North Carolina Information Highway (NCIH)

Comments

- Offers opportunity for smaller groups to train in a more informal setting than in satellite teleconferences.
- For full interactivity (two-way video; two-way audio) only five sites can participate simultaneously.
- As of January 1997, 128 sites were on line statewide, offering a mix of high school, community college, university, and other public agency sites.

For More Information

- Subscribe to NCIH scheduling LISTSERV by sending an e-mail message to: majordomo@lists.sips.state.nc.us Put nothing in the subject area. In the message area put: subscribe ncih-scheduling
- Reach the NCIH homepage at: http://www.ncih.net

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Observation and Field Trips

Comments	Contacts and Assistance
• Can be as simple as finding time to visit other classrooms within the same school, or more elaborate—traveling to other schools physically or electronically (via Internet, live interactive video, teleconferencing) • Provides relevant ideas and information for direct and immediate application. • Works best with small groups • Logistics may be challenging, depending upon type and length of field trip.	• NC Eisenhower Programs: Helping Teachers to Use Technology in the Classroom. Contact: Elizabeth French, Math/Science Education Network, U. of North Carolina-Chapel Hill, 919/966-3256. This program funds a variety of partnerships between institutions of higher education and public schools to enhance use of technology in classrooms. 🗁 See Attachment H for list of current projects and contact names. • School sites featured in the Star School series: *"Using Technology Effectively: Case Studies and Applications."* 🗁 See Attachment I.

Packaged Workshops, Seminars and Courses

Comments	Contacts and Assistance
• Good for establishing a common focus or core of training for all teachers. • Can be quite costly to provide all needed training for all teachers. • Content and approach are often one-size-fits-all, limiting capacity to address diverse learning needs, interests, and styles. • Means for follow-up support usually inadequate or limited. • If providers and materials are selected with care, based on adult learning criteria and local needs assessments, limitations may be overcome. • When working with community colleges, universities, state consultants, commercial vendors and publishers, or any other training providers: provide trainers with copies of objectives and criteria you expect them to meet; focus on the "Essential Training Workshop Components" (listed on the next page) and on the criteria outlined on pages 9 and 10. • Refer to the local technology plan and ensure planned activity ties to the plan and teachers' expectations.	• Institute for the Transfer of Technology to Education National School Boards Assoc. 1680 Duke Street Alexandria, VA 22314 703/838-6722 itte@nsba.org http://www.nsba.org • Computer Learning Foundation PO Box 6007 Palo Alto, CA 94306-0007 Tel: 415/327-3347 Fax: 415/327-3349 • ASCD 1250 N. Pitt St. Alexandria, VA 22314-1453 Tel: 703/549-9110 member@ascd.org • T.H.E. Institute (Technological Horizons in Education) Tel: 1-800-947-8885 http://www.thejournal.com • NC Technology Professional Development Programs, sponsored by various public/university educational entities 🗁 See Attachment J. • NCDPI's Distance Learning Section annually distributes a selection of programming packages or strands from the StarNet staff development schedule that can be used locally for renewal credit, following local procedures.

Note: Colleges and universities are beginning to offer both staff development and at least portions of regular classes via the Internet. Contact individual departments of education to learn more about this new opportunity.

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Training Workshops: Essential Components

☑ A brief nuts-and-bolts explanation of the topic.

☑ Written or verbal feedback.

☑ A talk-and-walk-through demonstration.

☑ Adequate time for hands-on practice, note-taking, and questions.

☑ Creation of at least one document, chart, lesson, or teaching tool.

Sandy Pope
"Singing the Praises of On-site Training"
TECHNOLOGY CONNECTION, May, 1996

Parents and the Community

Comments	Contacts and Assistance
• Can help support your staff development efforts in a number of ways: as knowledgeable and skilled technology technicians, trainers, or general assistants; as guest speakers or visitors at motivational events; or as possible sources for donated funds or equipment.	• PTA-NC Congress 3501 Glenwood St. Raleigh, NC 27612 Tel: 919/787-0534 • Your local school PTA, businesses and industries, and community service groups

Peer Mentors

Comments	Contacts and Assistance
• Provides a way to pair teachers for ongoing learning and support. • Provides one-on-one learning and help that is difficult to deliver in large-group settings with a single trainer. • Can assign mentors to share knowledge and skill in specific technology areas, specific curriculum areas, or any way that supports your training objectives. • By assigning two people to each teacher—one to mentor and another to learn from— learning, support, and reinforcement can be strengthened even more.	• An excellent example of peer mentoring is portrayed in a 12 minute videotape, *"Technology in Dare County: Lighting the Way for North Carolina Schools,"* available through: the Videotape Loan Library, Distance Learning Systems, NCDPI, 301 N. Wilmington St., Raleigh, NC 27601-2825. Tel: 919/715-1544 Fax: 919/733-4762 Request forms are available in *Video Catalog* in school Media Center or from system level Media and Technology supervisor. 🗁 Attachment K provides sample copy.

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Professional Development Collections

Comments	Contacts and Assistance
• Can be anything from a folder of photocopied articles for required or voluntary reading to an entire room full of media and materials ready for exploration. • Should be an equitable process for assuring accessibility to all trainees.	• *Professional Collection* appendix from *Learning Connections: Guidelines for Media and Technology Programs*, NCDPI, January 1992 continues to provide an excellent outline to develop a professional collection. It is provided as 🗁 Attachment L • *Staff Development Video Library*, part of NCDPI's Videotape Loan Library, provides video resources to enrich local collections. 🗁 Attachment K provides loan request form. • **Internet** - *Internet Addresses.* A listing of Internet addresses to assist educators in securing information relative to administrative support, language arts, mathematics, science, and social studies. Available from NCDPI Publications Sales, Phone-1-800-663-1250; fax- 919/715-1021. $5 for 25 copies. Order #EM123. NCDPI Homepage: http://www.dpi.state.us • International Society for Technology in Education (ISTE). Provides catalog, *Resources and Services for Technology-Using Educators.* Topics include: using the Internet; how to use software; restructuring, planning, professional development. Address: 480 Charnelton St., Eugene, OR 97401; phone-1-800-336-5195; e-mail-iste@oregon.uoregon.edu.

IV. Professional Development Collections (cont.)

Comments	Contacts and Assistance
	• Technology magazines: *Classroom Connect* *Learning and Leading with Technology* *Technology Learning* *Technology Connection* *Electronic Learning* *Multimedia Schools* *Media and Methods* *Technology Teacher* *School Library Journal* (technology section) *Instructor* (technology section) • *InfoTech: The Advisory List* from Information Technology Evaluation Services NCDPI, 301 N. Wilmington St., Raleigh, NC 27601-2825, Tel.: 919/715-5357. Provided free to all schools and teacher training institutions. One year subscriptions are available for $20 for others.

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Students and Teachers Learning Together

Comments	Contacts and Assistance
• Good way to build student and teacher technology competency at the same time. • Helps teachers accept new roles of teacher as learner, student as teacher, and both as experts as needed to learn together. • Presence of students keeps environment and application especially relevant.	• Yadkin County runs a summer computer camp for students, but which involves much sharing. Contact: Kaye Shugart, Yadkin Co. Schools, 121 Washington St., Yadkinville, NC 27055, Phone: 910/679-2051.

Teachers Teaching Teachers (Train the Trainer)

Comments	Contacts and Assistance
• Can stretch training dollars by having teachers who attend training activities/courses teach those who do not. • Need to carefully select trainers and provide incentives for the commitment of time and effort in training others. • Works best in schools where a "team climate" has been established and teachers readily accept instruction and assistance from peers.	• Many school systems have developed excellent "train the trainer" models. Example: Gaston Co. - Staff development materials, *"Jungle in July."* Send a blank diskette and a self-addressed envelope to: Debbie Core, Computer Coordinator, Gaston Co. Schools, 943 Osecelo Street, Gastonia, NC 28054-1397. • NC Distance Learning by Satellite Star School series, *'Using Technology Effectively in the Classroom,"* and *"Teachers Talking to Teachers,"* available through NCDPI Videotape Loan Library. 🗁 Attachment K provides sample copy.

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Videotapes

Comments	Contacts and Assistance
• Time independent. • Can be used effectively in small groups with facilitator leading discussion. • Provides visual and graphic examples.	• Explore the following sources for purchasing or borrowing tapes related to your training: - school media coordinators - professional societies - NCDPI Videotape Loan Library. Contact: 919/715-1544 or http://www.dpi.state.nc.us for complete list of titles. 🗁 Attachment K provides sample copy.

Topic: Evaluating the Technology Training Program

Question: What evaluation methods can I use to improve the quality and increase the impact of my training program?

- **Why Technology?**

  In order to evaluate your technology training efforts, it's important to know why you want technology implementation in your classrooms in the first place. Dr. Len Scrogan, Director of Technology, Boulder Valley Schools, in Boulder Colorado, has summarized well, with 5 key points, what we should be hoping to accomplish as a result of technology training:

  - Raise academic achievement
  - Improve learning efficiency
  - Increase student motivation
  - Provide new ways for children to learn
  - Improve teaching

  Your system may want to adapt or revise. Or focus on just one or two outcomes initially as you develop your technology training. See Attachment M as a sample from a North Carolina Local Education Agency.

- **Where Is the System Starting?**

  In the same way that you want to know your ultimate goals (or *why technology*), you need to know your starting point within your system. Take a look at the schematic on the next page and determine where your system falls on each of the scales.

- **Where Is the Teacher Starting?**

  Just as you need to know where your system is, because that is the environment in which your teachers work, you need to assess the technology skill starting point of each teacher. For a quick snapshot you can assess each teacher or have them perform their own self-assessment using the previous scale. For more detailed evaluation you can use the state-adopted competencies provided in 🗁 Attachment A.

- **Are Individual Training Efforts Moving Us toward Our Goals?**

  Training efforts must be looked at in both the long-term and short-term. Short-term measures can tell you if teachers' technology skills are increasing. Such measures can be simple performance-based testing. However, long-term measures must be both longitudinal and take into consideration multiple variables, using a variety of assessment tools, including standardized test scores, performance measures, student attendance records, and attitudinal surveys.

Topic: Addressing Renewal, Registration, and Record Keeping Issues

Question: **What guidelines and strategies are being used to effectively manage renewal, registration, and record keeping?**

The Policy

SBE Action
On March 14, 1996, the State Board of Education endorsed the School Technology Users Task Force report and approved the following recommendation:

• During each five-year cycle for license renewal, all North Carolina educators shall focus a portion of their training opportunities (three to five renewal credits) on Task Force recommended technology competencies, relevant to their licensure area, as deemed appropriate by their local school system.

[Task Force recommended technology competencies are provided as 🗁 Attachment A].

Implementation
The above policy was approved, effective March 14, 1996, for:

• all educators whose next five-year license renewal cycle begins after 6/30/96, and
• those educators with 3 or more years remaining in their current cycle for license renewal.

Audit/Monitoring Procedures

State Board policy establishes staff development requirements for educators in North Carolina, per Title 16, North Carolina Administrative Code, from which the following is excerpted:

- .0307 **Certificate Renewal**

  (a) Certificates are valid for a period of five years from the effective date of issuance. Holders must renew their certificates within each five-year period. The Department applies renewal credit to the person's certificate field(s) and/or professional duties.

  (b) The Department bases renewal or reinstatement of a certificate on 15 units of renewal credit. A unit of credit is equal to one quarter hour or two-thirds of a semester hour of IHE credit, or one school year of teaching experience. The Department will not record less than one credit on a certificate.

  (c) Currently employed personnel shall maintain a professional growth plan in accordance with department guidelines. These persons may obtain renewal credit for the following activities:

    (1) college or university credit activities;

    (2) teaching experience (one unit for every year);

    (3) local in-service courses or workshops which carry at least one unit renewal credit and which meet the following criteria:

      (A) ten clock hours of direct training by the instructor will equal on unit of renewal credit;

      (B) content and instructional activities designed in a sequential manner to develop specified competencies of a specific population;

      (C) led by qualified instructional personnel and directly supervised by the sponsoring school unit;

      (D) credit is granted on the basis of program completion and achievement of specified individual performance, which is determined by individual evaluation for specified competencies;

      (E) enrollment limited to assure accountability of credit granted;

(4) independent study of no more than five units of renewal credit per five-year renewal period which meets the following criteria:

(A) teachers and other certified personnel help to develop local independent study procedures which the superintendent keeps on file and periodically sends to each certified employee;

(B) the employee and the superintendent or his or her designee plan the experience in advance, including identification of competencies to be acquired and an evaluation to determine satisfactory achievement of those competencies; and

(C) the amount of credit awarded is related to the complexity of the competencies to be achieved;

(5) activities approved by the Department.

(d) Each LEA and approved governing boards of schools are responsible for assuring that all local courses and workshops and independent study activities which do not carry IHE credit meet the standards contained in this Rule.

(e) Agencies which the Department authorizes to administer renewal requirements locally shall adopt a procedure to determine the appropriateness of credit in advance of the renewal activity. In determining appropriateness the agency must consider direct relationship to critical job responsibilities, suitability of the content level and properly established credit for the activity. Each agency must report on participation in and effectiveness of renewal activities as the Department requests.

Determining If Activity Is Appropriate for Renewal Credit: Suggested Documentation

Documents	Information Included	Purpose
Certificate of Completion	• Participant's name • Activity Provider/ Sponsoring Agency Name • Title of Activity • Date(s) of Activity • Instructor/Coordinator Signature • Number of Contact Hours • Number of CEUs/Renewal Credits awarded	• To verify: - Participation - Level of Activity
Agenda	• Topics Covered • Dates • Times • Location	• To verify: - Content - Contact Hours - Level of Activity
Course Outline	• Topics Covered	• To identify content
Grade Report	• Course Title • Dates of Course • Institution Name	• To verify: - Content - Completion - Level of Completion

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Expectations for Private Providers

Private entities wishing to offer activities to your employees should provide one or more of the following evidences for consideration:

- organizational structure
- activity outline
  - purpose of activity
  - time-line agenda including total number of contact hours
  - content covered, and
- instructor(s) background/resumes

Expectations for Public Providers

Public providers should be able to provide participants with a certificate of completion or a transcript verifying participation and content.

[**Note:** Prior approval for participation in a proposed renewal credit activity should **always** be required.]

Tools for Monitoring

The Human Resource Management System (HRMS) is a software package used in most school system personnel offices to mange employee data. It can be used to track employee staff development classes, including computer competency renewal classes. HRMS will total the number of computer competency credits that a person has completed during the license renewal period and can generate a report summarizing the information. It is available through the Department of Public Instruction for an initial fee of $1,800 with an annual maintenance fee based on ADM. Contact Anne Brown, 919/715-1079 for further information.

Attachments

Samples •
Examples •
Detail •

A. North Carolina Teacher Technology Competencies

B. Training Objectives, Content, and Parameters: Some Local Samples

C. Needs Assessment Form: A Sample

D. School Technology Inventory: An Example

E. UNC Educational Consortia

F. Regional Education Service Alliances/Consortia

G. Internet Access Options

H. Summary Description of Eisenhower Year Eight Projects

I. Featured Sites and Teachers in Star Schools Series: "Case Studies and Applications"

J. North Carolina Technology Professional Development Programs: Some Examples

K. DPI Videotape Loan Library: Request Form

L. Guidelines for Developing a Professional Collection

M. Technology Training Program Evaluation Form: Local Sample

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North Carolina Teacher Technology Competencies

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Attachment A

North Carolina Teacher Technology Competencies: An Overview

National Competencies	The International Society for Technology Education (ISTE) is working with many professional education groups to develop standards and milestones that can help schools establish local technology plans. Educational Technology Support standards will describe school roles in staff development and may include national technology competencies for teachers. If and when adopted by the National Council for Accreditation of Teacher Education (NCATE), national competencies may impact state and local staff development programs.
State Competencies	Technology competencies for North Carolina teachers were adopted by the State Board of Education in March, 1996. An overview of the adopted competencies is included in this section, along with self-assessment tools, developed to guide local competency training.
Local Competencies	Some districts and schools are addressing additional competencies (district and/or school) identified in local technology plans and school staff surveys.

National Competencies Overview
(International Society for Technology Education)

ISTE Categories of Standards

1. Technology Foundations
   What students should know about technology and be able to do with technology.

2. Using Technology in Learning and Teaching
   How technology should be used throughout the curriculum to achieve the National Education Goals.

3. Educational Technology Support
   Describing systems, access, staff development, and support services schools should provide.

4. Student Assessment and Evaluation of Technology Use
   Means of assessing student progress and evaluating the use of technology in learning.

State Competencies Overview
(State Board of Education)

In March, 1996, the N.C. State Board of Education adopted the following recommendation of the School Technology Users Task Force:

During each five-year cycle for license renewal, all North Carolina educators shall focus a portion of their training opportunities (three to five renewal credits) on Task Force recommended technology competencies, relevant to their licensure area, as deemed appropriate by their local school system.

State-Adopted Technology Competencies for Teachers	
BASIC competencies support and enhance professional productivity, information access, collaboration, and communication among educators. Basic competency categories are: 1. Computer operation 2. Setup, maintenance and troubleshooting 3. Word processing/introductory desktop publishing 4. Spreadsheet/graphing 5. Database 6. Networking 7. Telecommunications 8. Media Communications (including image and audio processing) 9. Multimedia integration	**ADVANCED** competencies enable educators to use multiple forms of technology to enhance learning in their classrooms. Advanced competency categories are: 1. Curriculum 2. Subject-specific knowledge 3. Design and management of learning environment and resources 4. Child development, learning, and diversity 5. Social, legal, and ethical issues

BASIC TECHNOLOGY COMPETENCIES FOR EDUCATORS

Self-Assessment Tool

Developed by
E.T.C.* Work Group

This document contains a sample assessment tool for the new Basic Technology Competencies for educators. This is a multi-purpose document. It dissects the knowledge and skills, both essential and expanded, into easily assessed subsets. This document additionally aligns these Technology Competencies with the student Computer Skills and Information Skills Curriculum K-12. Also, skills needed to accomplish some of the competencies have been added and are indicated by dots and dashes. This tool can serve as a personal record for educators, documenting the way skills are acquired and completion date of acquisition.

This document was developed for your convenience and use. You may choose to adapt it in any way to meet the special needs of your LEA or school.

* **Educator Technology Group**

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Cindy Deal	Peggy Douglas	Fran Sitton	Alisa Chapman
Angela Hodges	Jean White	Judy LeCroy	Sue Rogers
Mary Lou Howe			

STR	GL	1.0 COMPUTER OPERATION SKILLS	DK	K	U	AT	Acquisition of Skills (Self-taught, inservice, courses)	Completion Date
		ESSENTIAL KNOWLEDGE & SKILL						
		Demonstrate these skills:						
TO	K-3	1.1 Start up and shut down computer system and peripherals						
		• Use correct startup/shut down procedure according to computer type						
		• Start up and shut down printer						
		• Start up and shut down CD-ROM						
		• Start up and shut down scanner						
TO	K-3	1.2 Identify and use icons, windows, menus						
		• Point, click, double-click, click and drag with mouse						
		• Maximize and minimize a window						
		• Use pull-down and expanded pull-down menus						
		• Select, open, and move an icon						
		• Select, open, move, and close a window						
		• Resize a window and title/stack windows						
		• Scroll up/down, left/right within a window						
		• Make a window active/inactive						
TO	2	1.3 Start an application and create a document						
WP	2-4	1.4 Name, save, retrieve, revise a document						
		• Name a document						
		• Save a document using both the Save and Save As Commands						
		• Retrieve a document from floppy disk						
		• Retrieve a document from hard drive						
		• Rename a document						
		• Edit and re-save a document						
WP	2-4	1.5 Use printing options						
TO	K-3	1.6 Insert and eject floppy disk and CD-ROM						
CSU	9-12	1.7 Initialize, name/rename floppy disk and hard disk						
WP	9-12	1.8 Copy document from hard disk to floppy disk and vice versa						
CSU	9-12	1.9 Create and name/rename subdirectories/folders						
WP	2-4	1.10 Save, open, place documents inside subdirectories/folders						

Legend: DK= Do not Know
K = Know, but Need Additional Help
U = Know and Use
AT = Able to Teach

BOLD =Technology Competencies

STR=Curriculum Strands
SS=Spreadsheet
SU=Societal Use
ET=Ethics
TO=Terms & Operation
WP=Word Processing
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GL=Grade Level

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STR	GL	1.0 COMPUTER OPERATION SKILLS (Continued)	DK	K	U	AT	Acquisition of Skills (Self-taught, Inservice, courses)	Completion Date
CSU	9-12	1.11 Open and work with more than one application at a time						
		1.12 Use special operating features for people with disabilities						
		Demonstrate knowledge through practical application:						
		1.13 Terms such as graphical user interface, document, application, K (kilobyte), hierarchical file system, directory, operation system, system software, RAM						
CSU	9-12	1.14 Storage capacity of floppy/hard disks, CD-ROMs						
CSU	9-12	1.15 Similarities/differences and advantages/disadvantages of various operating systems						
		EXPANDED KNOWLEDGE AND SKILLS						
		Demonstrate these skills:						
		1.16 Make more memory available						
		1.17 Install/reinstall and update system software and printer drivers						
		• Install/reinstall and update system software						
		• Install/reinstall and update printer drivers						
		1.18 Exchange disks and files among Macintosh, MS-DOS/Windows and Apple II computers						

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STR	GL	2.0 SETUP, MAINTENANCE, AND TROUBLESHOOTING	DK	K	U	AT	Acquisition of Skills (Self-taught, inservice, courses)	Completion Date
		ESSENTIAL KNOWLEDGE AND SKILLS						
		Demonstrate these skills:						
CSU	9-12	**2.1 Setup computer system and connect peripheral devices**						
		• Setup computer system (i.e., CPU, monitor, keyboard, mouse, external drive)						
		• Connect peripheral devices (i.e., printers, CD-ROM, external drives, modem, scanner)						
TO	K-3	**2.2 Protect and care for floppy disks**						
		2.3 Clean computer components and printer						
CSU	9-12	**2.4 Make backup copies of key applications and documents**						
CSU	9-12	**2.5 Use self-help resources to diagnose and correct common hardware/printing problems**						
CSU	9-12	**2.6 Installing and upgrade an application**						
		Demonstrate knowledge through practical application:						
TO	K-3	**2.7 Proper operating environment for computer and peripherals**						
ET	8	**2.8 Protection against computer viruses**						
		2.9 Technical assistance resources available at local level						

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STR	GL	3.0 WORD PROCESSING/INTRODUCTORY DESKTOP PUBLISHING	DK	K	U	AT	Acquisition of Skills (Self-taught, Inservice, courses)	Completion Date
		ESSENTIAL KNOWLEDGE AND SKILLS						
		Demonstrate these skills:						
WP	2-5	**3.1 Enter and edit text and copy and move a block of text**						
		Use the following functions:						
		• Clipboard (a special location in the computer's memory that temporarily holds information)						
		• Cut (a function that removes highlighted information from its current location and places it on the clipboard)						
		• Copy (a function that duplicates highlighted information and places a copy on the clipboard)						
		• Paste (a function that copies information from the clipboard to a document)						
		• Delete text (using the mouse, place the I-beam cursor at the location where the new text is to be placed, click the mouse button and begin typing the new text)						
		• Insert text (using the mouse, place the I-beam cursor at the location where the new text is to be placed, click the mouse button, and begin typing the new text)						
WP	5	**3.2 Copy and move blocks of text**						
WP	5	**3.3 Change text format and style, set margin, line spacing, tabs**						
		Use the following functions:						
		• Sizing font, (change actual size of text)						
		• Style (choose type and special effects such as bold, italics underline)						
		• Margins (amount of white space on the top, bottom, left and right edges of page)						
		• Set margins (to change defaults, already set margins, by using margins)						
		• Line spacing (amount of space between lines in a paragraph such as single space, space and a half, and double space)						
		• Tab stops (align/justify to left, right, center, decimal tab)						
		• Tabs (used to position text within a line or to create tables of data)						

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STR	GL	3.0 WORD PROCESSING (continued)	DK	K	U	AT	Acquisition of Skills (Self-taught, Inservice, courses)	Completion Date
WP	6	3.4 Check spelling, grammar, word usage						
		Use the following word processing utilities:						
		• Spell check						
		• Thesaurus						
		• Dictionary, outliner, grammar check as applicable						
WP	8	3.5 Create a header or footer						
WP	8	3.6 Insert date, time, page number						
WP	8	3.7 Add columns to document						
WP	8	3.8 Insert clip art into document						
		Demonstrate knowledge through practical application:						
WP	2-6	3.9 Terms such as cursor, format, font, style, header, footer, spelling checker						

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STR	GL	4.0 SPREADSHEET/GRAPHING	DK	K	U	AT	Acquisition of Skills (Self-taught, inservice, courses)	Completion Date
		ESSENTIAL KNOWLEDGE AND SKILLS						
		Demonstrate these skills:						
SS	6-8	**4.1 Interpret and communicate information in an existing spreadsheet**						
		• Understand the concept of a spreadsheet and relate a print spreadsheet to an electronic spreadsheet						
		• Understand the possibilities of spreadsheet calculations						
		• Given a print spreadsheet and an electronic spreadsheet, interpret and communicate information from each						
SS	7-8	**4.2 Enter data in an existing spreadsheet**						
		• Given a spreadsheet template, enter data in a cell(s)						
		• Use the entry bar for data entry and editing						
		• Print a spreadsheet (with no text formatting, etc.)						
		• Manipulate data within an existing spreadsheet in order to solve a problem.						
CSU	9-12	**4.3 Create a spreadsheet with rows, columns, headings**						
CSU	9-12	**4.4 Create/copy formulas and functions to perform calculations**						
		• Understand the three basic types of cells (label, value, and formula)						
		- Format a cell or range of cells for the following: currency, date, time, percentage, fixed decimal						
		- Protect a cell or range of cells						
		- Create spreadsheet with labels and values						
		- Create a formula using a formula indicator symbol, cell references, and operations symbols (+-*/)						
		- Understand order of operations as it relates to writing a spreadsheet formula (PEMDAS)						
		• Create a formula using functions (SUM and AVERAGE) and a range of cells						
		- Be aware of other functions available						
		- Be aware of look up tables and their use						

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STR	GL	4.0 SPREADSHEET/GRAPHING (CONTINUED)	DK	K	U	AT	Acquisition of Skills (Self-taught, inservice, courses)	Completion Date
		• Copy values using fill down and fill across						
		- Copy formulas using fill down and fill across						
		- Be aware of relative and absolute value as it relates to copying formulas						
		• Change the appearance of a spreadsheet by inserting columns and rows						
		- Change the appearance of a spreadsheet using column width and row height						
		- Change the appearance of a spreadsheet using gridlines, headers, and footers						
		- Change the appearance of a spreadsheet using text features for label cells						
		- Change the appearance of a spreadsheet using hiding and freezing/splitting						
CSU	9-12	**4.5 Create a graph from spreadsheet data**						
		• Know the three basic types of graphs (bar, pie, line) and their uses						
		• Using a previously created graph, select a range of data and choose the appropriate graph						
		• Change and refine a graph's appearance to include headers, legend, labels, series, axes, color, etc.)						
		• Print a refined graph						
CSU	9-12	**4.6 Insert a spreadsheet into a word processing document**						
		• Open a word processing document and insert an existing spreadsheet into the document						
		• print a word processing document with an inserted spreadsheet						
		• Insert a pre-existing graph into a word processing document						
		• Insert headers and footers						
		Demonstrate knowledge through practical application:						
SS	6	**4.7 Terms such as spreadsheet, cell, data entry bar, formula, function**						

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STR	GL	5.0 DATABASE	DK	K	U	AT	Acquisition of Skills (Self-taught, Inservice courses)	Completion Date
		ESSENTIAL KNOWLEDGE AND SKILLS						
		Demonstrate these skills:						
DB	6-8	5.1 Use information from an existing database						
		• Describe the difference between a print database and a computer database						
		• Use a prepared database to enter data						
		• Add a record to an existing database						
		• Delete a record to an existing database						
		• Search a database for specific information						
DB	6-8	5.2 Sort a database by specific fields, add and delete record						
		• Use a database to sort records						
		• Use a database to search for desired information given 1 criterion						
		• Use a database to search for desired information given 2 criteria (using "and", "or", or "not" connectors)						
		• Use sorting and searching techniques to solve a specific problem						
CSU	9-12	5.3 Create database with multiple fields and records						
		• Create database with multiple fields						
		• Create database with multiple fields and varying field sizes						
		• Create database with multiple records						
DB	6	5.4 Create custom layouts including columnar reports						
		• Create a database layout/report utilizing various word processing skills (including fonts, size, style, alignment, and borders)						
		• Create a database layout/report with headers and footers						
		• Create a database layout to match an existing form						
		• Create a database report with calculated summaries						
		• Print a database						
		- Print individual records and/or forms						
		- Print a database list/multiple records						

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STR	GL	5.0 DATABASE (continued)	DK	K	U	AT	Acquisition of Skills (Self-taught, inservice, courses)	Completion Date
		- Print a customized database report						
CSU	9-12	**5.5 Insert database fields into word processing document**						
		• Create a word processing document with inserted database fields						
		• Print a merged word processing/database document						
		Demonstrate knowledge through practical application:						
DB	4-8	**5.6 Terms such as database, field, record, layout, sort/arrange, search/select/filter, mail merge**						

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STR	GL	6.0 NETWORKING	DK	K	U	AT	Acquisition of Skills (Self-taught, Inservice, courses)	Completion Date
		ESSENTIAL KNOWLEDGE AND SKILLS						
		Demonstrate these skills:						
TC	5-7	6.1 Use a file server (connect/log on, retrieve a program or document, save a document to a specified location)						
		• Connect/log on						
		• Retrieve a program or document						
		• Save a document to a specified location						
		• Disconnect/log off						
CSU	9-12	6.2 Share files with others on a network						
		Demonstrate knowledge through practical application:						
		6.3 Terms such as local area network, wide area network, access rights, security passwords, file server, zone						
		EXPANDED KNOWLEDGE AND SKILLS						
		Demonstrate these skills:						
		6.4 Select/de-select a network zone						

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BOLD =Technology Competencies

STR=Curriculum Strands
SS=Spreadsheet
SU=Societal Use
ET=Ethics
TO=Terms & Operation
WP=Word Processing
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CSU=Curriculum Software Use

GL=Grade Level

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STR	GL	7.0 TELECOMMUNICATIONS	DK	K	U	AT	Acquisition of Skills (Self-taught, inservice, courses)	Completion Date
		ESSENTIAL KNOWLEDGE AND SKILLS						
		Demonstrate these skills:						
TC CSU	5-7 9-12	**7.1 Connect to the Internet or an on-line service**						
		• Check physical connections before attempting log on						
		- Check that all telecomputing hardware is turned on and check cable connections						
		• Locate and use connection software (configuration & client)						
		• Connect to Internet via an Internet Service Provider (ISP) with a user ID and password						
		• Be aware of commercial providers and their services						
TC CSU	5-7 9-12	**7.2 Use Electronic Mail (compose, send, retrieve, read, respond)**						
		• Compare the process of sending and receiving messages electronically vs non-electronically						
		• Compose new e-mail (address and subject; explanation of address domains)						
		• Send e-mail (concepts of carbon copy (cc) and blind carbon copy (bcc))						
		• Retrieve and read e-mail						
		• Reply to sender and forward e-mail						
		• Save, print, and delete e-mail						
TC CSU	5-7 9-12	**7.3 Access and use resources on Internet and World Wide Web**						
		• Identify computers as tools for accessing current information (concept of Internet as a large network and database)						
		• Use browser software (concepts: hypertext, html, homepage)						
		• Access a specific web site by entering the appropriate URL (concept of URL, http, web site)						
		• Find a search engine site and perform a specific web search (list of search engines and purposes)						
		• Knowledge and use of filters (software driven, server based, search engine inclusive)						

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STR	GL	7.0 TELECOMMUNICATIONS (continued)	DK	K	U	AT	Acquisition of Skills (Self-taught, Inservice, courses)	Completion Date
		Demonstrate knowledge through practical application:						
		7.4 Terms such as telecommunications, direct access, dial-in access, modem, baud rate, Internet, World Wide Web						
		• Identify telecomputing terms (i.e., telecommunications, direct access, dial-in access, modem, baud rate, Internet, World Wide Web, telnet)						
		7.5 Obtain/maintain an account on the Internet or an on-line service that provides Internet access						
		• Knowledge of local accounts and access						
		• Knowledge of commercial accounts and access						
		7.6 On-line conferences relevant to professional information needs						
		• Be aware of on-line conference relevant to professional information						
		7.7 Use of Telnet to connect to a remote computer on the Internet						
		• Connect to county or university library						
		EXPANDED KNOWLEDGE AND SKILLS						
		Demonstrate these skills:						
		7.8 Connect a computer to a modem and telephone line for dial-in access						
		7.9 Install and configure telecommunications software						
		7.10 Upload a text file and send as electronic mail						
		7.11 Use specialized e-mail lists relevant to professional information needs						
		7.12 Create and use group addresses for electronic mail						
		7.13 Read, save, print, reply to, forward electronic mail						
		7.14 Use Gopher to browse resources on the Internet						
		7.15 Use FTP to send or retrieve files from remote computers						
		7.16 Use effectively distance learning, desktop video conferencing, and teleteaching technologies						

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STR	GL	8.0 MEDIA COMMUNICATIONS (INCLUDING IMAGE AND AUDIO PROCESSING)	DK	K	U	AT	Acquisition of Skills (Self-taught, Inservice, courses)	Completion Date
		ESSENTIAL KNOWLEDGE AND SKILLS						
		Demonstrate these skills:						
CSU WP	9-12 8	**8.1 Produce print-based products (e.g., newsletters, brochures, posters, books)**						
		• Layout						
		- Specify multiple-columns						
		- Set up horizontal & vertical guides						
		- Use column guides & rulers (position zero, lock/unlock guides, reposition rulers, equal/unequal columns)						
		- Create Master Page (display and hide elements)						
		• Text						
		- Create, place, format, & position text (create drop caps, apply shading, rotating text, auto flow/reflow text, manual flow text, auto page number, custom text wrap)						
		- Rotate text						
		- Create banner text						
		- Create Table of Contents, Index						
		- Create & apply styles						
		- Format tabs & Indents						
		• Graphics						
		- Resize and position objects, proportionally scale objects						
		- Create, place, format, & position graphics elements (draw and position objects, group, ungroup objects, shade, color)						
IS	6-12	**8.2 Produce electronic slides/overheads**						
		• Ensure good design features						
		• Select template						
		• Outline presentation						
		- Create basic outline						
		- Use Tools to modify/rearrange						

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STR	GL	8.0 MEDIA COMMUNICATIONS (CONTINUED)	DK	K	U	AT	Acquisition of Skills (Self-taught, inservice, courses)	Completion Date
		• Slides						
		- Define/edit color scheme						
		- Position & format text						
		- Insert graphics, sound, and/or video						
		- Organize slides for slide show						
		- Insert appropriate transitions						
		- Run and/or edit slide show						
		8.3 Set up and operate a videocassette recorder/player and monitor/TV						
CSU	9-12	**8.4 Connect a video output device (e.g., LCD panel) to computer for large screen display**						
		Demonstrate knowledge through practical applications:						
		8.5 Terms such as painting tool, drawing tool, compression						
		8.6 Role of media in effective communication						
IS	6-12	**8.7 Characteristics, strengths, and weaknesses of different media**						
		8.8 Consumer issues, including identification/evaluation of available media communication resources						
		EXPANDED KNOWLEDGE AND SKILLS						
		Demonstrate these skills:						
CSU	9-12	**8.9 Use painting and drawing tools**						
CSU	9-12	**8.10 Use digital camera and scanner**						
IS	9-12	**8.11 Use camcorder and edit video from a camcorder**						
IS	6-12	**8.12 Produce a video**						
		8.13 Set up and operate a videodisk player and TV receiver or monitor						

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STR	GL	9.0 MULTIMEDIA INTEGRATION	DK	K	U	AT	Acquisition of Skills (Self-taught inservice, courses)	Completion Date
		ESSENTIAL KNOWLEDGE AND SKILLS						
		Demonstrate these skills:						
CSU	9-12	**9.1 Use a linear multimedia presentation**						
CSU	9-12	**9.2 Use a non-linear, hypermedia presentation**						
		Demonstrate knowledge through practical application:						
WP	7	**9.3 Terms such as media, multimedia, hypermedia, clip media**						
		EXPANDED KNOWLEDGE AND SKILLS						
		Demonstrate skills of:						
		9.4 Plan/produce a linear multimedia presentation						
		9.5 Plan/produce a non-linear, hypermedia presentation						
		9.6 Use a file compression utility						
		9.7 Input and digitize sound from microphone and audiocassette player/recorder						
		9.8 Create simple animations						

ADVANCED TECHNOLOGY COMPETENCIES FOR EDUCATORS

Self-Assessment/Portfolio Tool

Developed by
E.T.C.* Work Group

This document contains a sample assessment/portfolio tool for the new Advanced Technology Competencies for educators. This is a multi-purpose document. It lists suggested experiences or activities that demonstrate advanced skill mastery. Format and numeration of skills follow the Basic Technology Competencies Self-Assessment Tool developed earlier. It can also serve as a professional portfolio for educators, documenting the way skills are acquired and completion date of acquisition.

This document was developed for your convenience and use. You may choose to adapt it in any way to meet the special needs of your LEA or school.

*Educator Technology Group

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Advanced Technology Competencies for Educators

PR	10.0 CURRICULUM	DK	K	U	Evidence of Mastery (Lesson plans, projects, products, portfolios, etc.)	Date of Evidence
	ESSENTIAL KNOWLEDGE & SKILLS					
	Demonstrate these skills:					
	10.1 Use the Computer Skills Curriculum to identify what students should know and be able to do					
	• List the appropriate Computer Skills Curriculum strands and indicators for your appropriate grade level and/or subject area					
	10.2 Use school television resources that support the curriculum					
	• List school television resources and their correlation to your appropriate grade level curriculum and computer skills competencies • Develop lesson plans utilizing school television resources • Develop materials for better implementation of lesson plans (worksheets, graphic organizers, activities) • Develop an assessment tool to evaluate student learning via school television resources					
	10.3 Access resources for planning instruction available via telecommunications (e.g., experts, lesson plans, authentic data, curriculum materials)					
	• Develop a listing of URLs that correlate to your appropriate grade level curriculum and computer skills competencies • Compile and organize telecommunication resources into a usable off-line format • Correlate telecommunication resources to your Standard Course of Study instructional objectives • Utilize intranet software for local area network use of web resources					

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Advanced Technology Competencies for Educators

PR	10.0 CURRICULUM	DK	K	U	Evidence of Mastery (Lesson plans, projects, products, portfolios, etc.)	Date of Evidence
	Demonstrate knowledge through practical application:					
	10.4 Goals of the NC Computer Skills Curriculum					
	• Develop lesson plans to correlate computer skills with other curricular objectives • Collect and organize available computer skills resources: DPI lesson plans, 7-11 SLIPS, data files, vocabulary lists, district-developed materials, commercial products • Incorporate computer skills lesson plans into classroom instruction (demonstration by videotape, principal observation, student work/portfolios, peer observation) • Make computer skills resources available to others by distributing resources, by demonstrating skills through creation of files and additional handouts, and by discussion at staff meetings or planning sessions					
	10.5 The NC Computer Skills Assessment					
	• Utilize available released items (knowledge and performance) as assessment for computer skills for your appropriate grade level/subject • Incorporate available test items into assessment of other instructional objectives (language arts, math, social studies, science, etc.) • Develop additional test items for assessment of computer skills • Develop test items involving computer skills for assessment of other instructional objectives					

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PR	10.0 CURRICULUM	DK	K	U	Evidence of Mastery (Lesson plans, projects, products, portfolios, etc.)	Date of Evidence
	EXPANDED KNOWLEDGE AND SKILLS					
	Demonstrate these skills:					
	10.6 Locate, evaluate, and select appropriate teaching/learning resources and curriculum materials for the content area and target audience, including computer-based products, videotapes and discs, local experts, primary documents and artifacts, texts, reference books, literature, and other print sources					
	• Develop a computer software listing for an appropriate grade/subject area • Develop a videodisc listing for an appropriate grade/subject area • Develop a videotape listing for an appropriate grade/subject area • Develop a community resource file/notebook for your school or grade level • Develop a print media (texts, reference books, literature, etc.) listing for an appropriate grade/subject area					

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PR	11.0 SUBJECT-SPECIFIC KNOWLEDGE	DK	K	U	Evidence of Mastery (Lesson plans, projects, products, portfolios, etc.)	Date of Evidence
	ESSENTIAL KNOWLEDGE AND SKILLS					
	Demonstrate these skills:					
	11.1 Use technology in the discipline/subject for learning and as a medium for communications					
	• Design curriculum learning experiences in which students use technology for word processing, database and spreadsheet activities, and for Internet access • Facilitate student use of technology hardware/software to introduce and reinforce content topics • Design and deliver lessons using technology resources on a selected discipline/subject • Design and deliver a classroom activity using telecommunications • Design and deliver a lesson using presentation software (e.g., HyperStudio, PowerPoint, etc.)					
	11.2 Use media and technology to present the subject so that it is comprehensible to others					
	• Use a variety of technologies in presenting curriculum information to students (e.g., computer and LCD or data projector, visualizer, VCR or videodisc with monitor, overhead calculators, digital camera, videomicroscope) • Design a multimedia project to present curriculum information					
	11.3 Use technology-based tools that are specific to the discipline					
	• Use content-specific technology tools such as: probeware, midi devices, graphics tablet, graphing calculators, music, data plotters, videomicroscopes, CAD/CAM systems					

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PR	11.0 SUBJECT-SPECIFIC KNOWLEDGE	DK	K	U	Evidence of Mastery (Lesson plans, projects, products, portfolios, etc.)	Date of Evidence
	11.4 Use technology to facilitate teaching strategies specific to the discipline					
	• Utilize computers in gathering, organizing, and presenting information through cooperative learning groups • Use Internet resources to construct classroom simulations • Use media communication technologies in classroom presentations					

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PR	12.0 DESIGN AND MANAGEMENT OF LEARNING ENVIRONMENTS/RESOURCES	DK	K	U	Evidence of Mastery (Lesson plans, projects, products, portfolios, etc.)	Date of Evidence
	ESSENTIAL KNOWLEDGE AND SKILLS					
	Demonstrate these skills:					
	12.1 Develop performance tasks that require students to (a) locate and analyze information as well as draw conclusions and (b) use a variety of media to communicate results clearly					
	• (a) Utilize resources (e.g., databases; CD encyclopedias, atlases, dictionaries; spreadsheets; Internet; videodiscs) for classroom instruction and/or staff development • (b) Develop portfolios illustrating student and/or teacher instructional demonstration or utilization of technologies such as: videodiscs, VCR, computer generated graphs, multimedia programs/presentations • (b) Deliver electronic presentations (class/individual projects) • (b) Use technology in presentations to civic/community organizations/colleagues • (b) Participate in staff development on desktop publishing					
	12.2 Use computers and other technologies effectively and appropriately to collect information on student learning using a variety of methods					
	• Use data-collection technology such as: Instructional management systems, Instructional management assessments, Electronic gradebooks, Student video projects and productions, Technology benchmark test development, and Student management systems					

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PR	12.0 DESIGN AND MANAGEMENT OF LEARNING ENVIRONMENTS/RESOURCES	DK	K	U	Evidence of Mastery (Lesson plans, projects, products, portfolios, etc.)	Date of Evidence
	12.3 Use computers and other technologies effectively and appropriately to communicate information in a variety of formats on student learning to colleagues, parents, and others					
	• Produce materials such as desktop publishing products (e.g., brochures, newsletters, flyers, school newspaper); mail merge form letters, electronically generated letters, and electronic progress reports • Design graphs/presentations of student progress • Facilitate student presentations using multimedia presentations to colleagues, civic/community/parental organizations • Conduct staff development sessions on technology tools for communication • Conduct instructional classes for parents • Deliver educational conference presentations • Develop web pages to share information • Use e-mail					
	Demonstrate knowledge through practical application:					
	12.4 Physical settings that support active student involvement, inquiry, and collaboration					
	• Provide input on the planning of technology classroom utilization for new facilities and on re-modeling, and renovations of existing facilities • Establish classroom/areas with the physical atmosphere reflecting technology utilization • Display student (individual and collaborative) technology projects • Arrange classroom furniture to facilitate cooperative learning using technology					

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PR	12.0 DESIGN AND MANAGEMENT OF LEARNING ENVIRONMENTS/RESOURCES	DK	K	U	Evidence of Mastery (Lesson plans, projects, products, portfolios, etc.)	Date of Evidence
	12.5 Organizational and management strategies that support active student involvement, inquiry, and collaboration					
	• Develop technology units and lesson plans integrating technology and databases of instructional materials • Chart academic progress of student growth utilizing technology • Document and prepare an organized collection of student projects/learning experiences applying technology and various learning styles					
	12.6 Resources available including satellite, cable, wireless, and ITFS (Instructional Television Fixed Service)					
	• Participate in satellite transmitted staff development • Facilitate student learning utilizing satellite/cable, educational television, or ITFS broadcast • Utilize wireless technology in classroom presentations (remote controls for videodisc and VCRs), wireless networking in computer labs					
	EXPANDED KNOWLEDGE AND SKILLS					
	Demonstrate these skills:					
	12.7 Select and create learning experiences that are appropriate for curriculum goals, relevant to learners, based upon principles of effective teaching and learning, incorporate the use of media and technology for teaching where appropriate, and support learner expression in a variety of media using a variety of media communication tools					
	• Prepare and use integrated instructional units for the teaching of computer skills within specific subject areas • Facilitate subject area student projects that use media and technology through the creation and/or presentation/publication stage					

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PR	13.0 CHILD DEVELOPMENT, LEARNING AND DIVERSITY	DK	K	U	Evidence of Mastery (Lesson plans, projects, products, portfolios, etc.)	Date of Evidence
	ESSENTIAL KNOWLEDGE AND SKILLS					
	Demonstrate these skills:					
	13.1 Use media and technology to address differences in children's learning and performance					
	• Demonstrate the use of various software and self-directed software programs to meet individual learning styles and needs • Use software and other technology devices to assess different learning styles • Use software and other technology devices such as diagnostic tools to measure student performance • Enhance the understanding of curriculum and student learning through utilization of technology in the classroom					
	13.2 Use media and technology to support learning for children with special needs					
	• Demonstrate the use of adaptive technologies such as: text-to-speech, sip and puff, head wand, tactical devices, special keyboards, braille printers, touch screens, closed caption, synthesizers, digitizers, large or modified screens • Use technologies for understanding of knowledge and skill reinforcement					
	13.3 Use media and technology to support learning for children whose primary language is not English					
	• Utilize bi-lingual software, literature, and other technologies such as: video conferencing, CD-ROMs, Internet, videodisc, videotapes, software, and electronic translators					

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PR	13.0 CHILD DEVELOPMENT, LEARNING AND DIVERSITY	DK	K	U	Evidence of Mastery (Lesson plans, projects, products, portfolios, etc.)	Date of Evidence
	13.4 Use appropriate local, state, and national services or resources to meet diverse learning needs through technology					
	• Coordinate projects that utilize or demonstrate the use of technology such as: Teacher Academy, Adaptive Technology Centers, health department, utility company, ERIC, NC Wildlife Commission, NC Extension Service					

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PR	14.0 SOCIAL, LEGAL, AND ETHICAL ISSUES	DK	K	U	Evidence of Mastery (Lesson plans, projects, products, portfolios, etc.)	Date of Evidence
	ESSENTIAL KNOWLEDGE AND SKILLS					
	Demonstrate these skills:					
	14.1 Establish classroom policies and procedures that ensure compliance with copyright law, fair-use guidelines, security, and child protection					
	• Discuss the LEA Copyright Policy or Acceptable Use Policy • Give list of actions and identify violations of copyright law • Develop procedures and policies as a collaborative classroom project • Develop web page development policies or guidelines for child protection (electronic publishing of names and/or photographs), etc.					
	14.2 Ensuring equal access to media and technology resources for all students					
	• Maintain sign-up sheet • Monitor student Log of Use • Publish a checklist of resources for all to use • Arrange centers to facilitate access for all users					
	Demonstrate knowledge through practical application:					
	14.3 Social, legal, and ethical issues related to technology use					
	• Discuss network security and Acceptable Use Policy • Use NC Computer Skills Curriculum - Ethical Issues Lesson Plans • Role play situations that involve illegal copying of software with a discussion to follow • Discuss personal property and personal responsibility • List examples of ethical and unethical issues; use videos such as *Don't Copy That Floppy* and its lesson plans (Order from the Software Publishers Association, 1-800-388-7478)					

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Training Objectives, Content, and Parameters: Some Local Samples

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Attachment B

Training Objectives, Content, and Parameters: Some Local Samples

Catawba County and Hickory City/Public Schools

TechTraC: A Train-the Trainer Model: - The Catawba County Schools, Hickory Public Schools and Catawba Valley Community College began TechTraC in June, 1995. This joint venture originally provided technology training for nineteen individuals - twelve from Catawba County, four from Hickory, and three from CVCC. By 1997, over 100 teachers were involved in the project, including some from other counties who pay a fee to participate. Participants are given a laptop computer, Microsoft Office, Microsoft Works, HyperStudio and six months of Internet training. In return, they promise under contract to provide training in word processing, spreadsheet, database, presentation, on-line access, and curriculum integration to other teachers. As this publication goes to print, TechTraC is very successful and growing.

Martin County Schools

Faculty, administrators, and staff members play an important role in the development, implementation and success of Martin County's plan. They must be encouraged to learn and grow. Some are fearful of the technology. This must be recognized and addressed in staff development. Training must be practical, active, ongoing and conducted at an appropriate pace to be effective. Therefore, a training model has been developed, entitled *Teachers as Facilitators.* The model incorporates learning stations, hands on activities, and peer coaching activities. Teachers and principals attend a week in the summer and 10 additional days throughout the year with substitutes, stipends, equipment and materials provided. Teachers receive training in different technologies, critical thinking, brain based learning, multiple intelligences and Paideia. Each teacher receives $5,000 to purchase technology and materials for their classroom. School teams provide support at the school level. The Technology Director and other members of the instructional staff at the district level provide direct assistance to teachers and administrators during the school year as they integrate new technologies and instructional strategies. The mission is to change the way teachers teach by providing staff development opportunities during the school year on the early release days, teacher workdays and during the summer.

In the professional collections of all libraries, teachers and students have access to a variety of periodicals such as *Electronic Learning, Computer Teacher, PC World, Byte, Mac World, Popular Science,,* and *Science Teacher.* Plans are underway for teachers and principals to attend professional conferences, meetings, workshops and visit other other schools and to broaden their knowledge of technology and its use in the classroom.

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This booklet is a compilation of excerpts from various sources used in the development of a Technology Staff Development Plan for Haywood County Schools. It also includes portions of that plan which pertain to staff development. It is offered as a guide, along with a syllabus of workshops available, to be used by school sites to plan staff development programs. It can also be used by individual teachers to determine needs and plan a personal technology program that will aid in both personal and professional computer use.

Mary Lou Daniel, Computer Resource Teacher, November 6, 1995

STAFF DEVELOPMENT

"Staff development has to model how to use technology in the teaching and learning process. The idea is not only to teach how to use the hardware and software, but how to integrate it into the curriculum."(Bell, p.34) This is the basic goal of our staff development program and all system generated classes include modeling of instruction and a curriculum integration component. We have taken the School Level Strands in the Computer Skills Curriculum section of the CBC and developed objectives to be shared by teachers and students in the teaching/learning process. Those objectives are as follows:

1. Teachers and students at every level will recognize the uses of computers in society.

2. Teachers at every level and students beginning in the first grade will develop an understanding of the ethical use of technology and will demonstrate ethical use of technology at all levels.

3. Teachers at every level and students beginning in kindergarten will learn terms pertaining to technology and the operation of computers.

4. Teachers at every level will support students in using age appropriate educational software in all areas of the curriculum.

5. Teachers at every level and students beginning in kindergarten will develop keyboarding knowledge and skills; formal keyboarding instruction for students will begin in third grade with reinforcement throughout middle school. Higher level keyboarding applications courses will be available through VOCATS offerings in high school.

6. Teachers and students at every level will have experience using word processors, students will use word processors for writing assignments in all areas of the curriculum.

7. Teachers at every level and students beginning in the fourth grade will develop database skills in order to access, interpret, and analyze information in all areas of the curriculum.

8. Teachers at every level and students beginning in the fourth grade will develop telecomputing skills and will use those skills at every level to access information applicable to all areas of the curriculum.

9. Teachers at every level and students beginning in the sixth grade will develop spreadsheet skills and will use spreadsheets for interpreting information and problem solving at all levels, particularly in the areas of math and science.

In order to train teachers to meet these objectives the following in-service courses have been developed and are offered on an on-going basis. The computer in-service instructor works with site technology committees to assess needs, develop training schedules, and also serves as an advisor on technology curriculum needs and requirements. The computer in-service instructor coordinates technology staff development programs taught by all sources in HCS. All classes are approved by the HCS staff development coordinator for CEU credit. A hands on approach is emphasized in all classes and adult theories of learning are considered in staff development lesson planning. These classes are taught after school, during planning periods, work days, and/or during the summer. The computer in-service teacher is available to model instruction and work with teachers in the computer lab or the classroom. Flexibility is the key to these offerings. Classes are open to all HCS staff members including support personnel and administrators.

In addition to instruction by the computer in-service teacher, the computer coordinator, and media coordinators at various schools, Haywood Community College offers a variety of computer classes and works with HCS to schedule classes and offers their labs for instructional use. Western Carolina University's Micronet sysop has also coordinated in-service workshops with HCS in the area of telecommunications.

A special workshop called "Principals of Technology" is offered to principals and assistant principals. This workshop provides an overall introduction to the technology curriculum from kindergarten through twelfth grade. Teachers from all areas of the curriculum and at all grade levels take participants through hands on activities that are presently being used in HCS classrooms. Recent research findings are presented and discussed as to their impact on technology instruction in HCS. As instructional leaders, the principals' understanding of student technology skill development and accepted instructional methodologies in the area of technology is crucial in the planning and evaluation of school technology instruction.

A train-the-trainer model for HCS is in development. Ten elementary teachers and nine middle school teachers have been participating in a program made available through the NCDPI and a federal Star Schools grant entitled "Using Technology Effectively in the Classroom". Participants in this program are very interested in further developing the train the trainer program. This is a top priority for our staff development program and will be one of the first areas in which state funds will be used. The main objective of this program is to establish a cadre of teachers in each school who can receive initial staff development training from various sources and then train their colleagues using knowledge of their individual school's dynamics to make the instruction more meaningful.

Another priority of the staff development program is to establish a model classroom with the newest technologies as a training facility, and for research and development as new technologies emerge. This would be a testing ground for new curriculum, software, and hardware applications. It would also serve as a resource for authoring multimedia

presentations for those schools that cannot afford development technology. System personnel could develop presentations for all areas of education, including staff development.

"The most important single factor effecting the successful incorporation of technology into the classroom is teacher staff development."(Chalmers, p. 48) This statement is the driving force behind our staff development program. The following is a paragraph included in our Level I Performance Assessment which really sums it up.

"Learning new technology can easily intimidate adults. Feelings of vulnerability usually arise because, as adults, we rarely are required to venture into the unknown as learners. For young students, though, being exposed to new ideas and being encouraged to try something new is almost a daily occurrence. So your inexperience with technology can actually be a blessing in disguise, because it provides you with wonderful opportunities to model for your students the way in which you expect them to approach new content." (Dyrli, Kinnaman, p. 20)

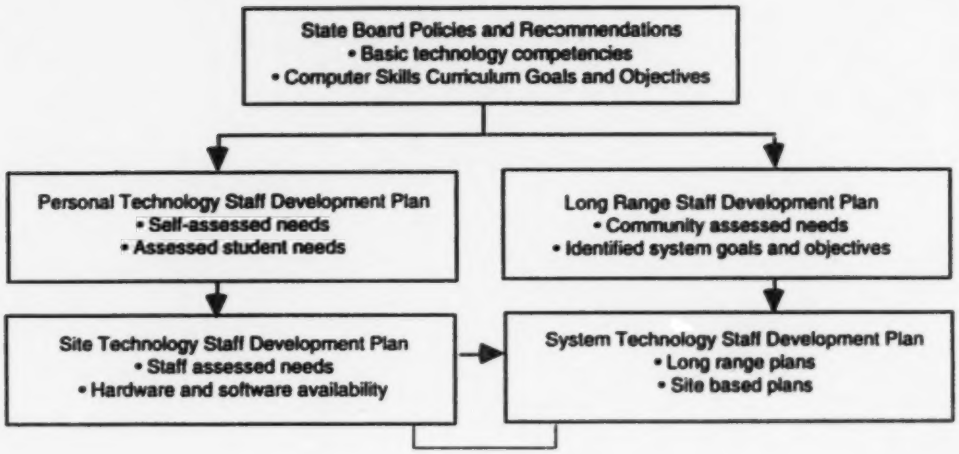
Sources

Bell, Sharon McCoy. "Teach Your Teachers Well". Electronic Learning April 1994: 34.

Chalmers, Ron."Technology Staff Development-Let's Be Creative." Curriculum Product News September 1994: 94.

Dyli, Odvard Egil and Kinnaman, Daniel E. "Tapping the Power of Today's Technology". Technology and Learning January 1994: 15-20.

• Graphic illustrating foundation for planning technology staff development, Haywood County Schools.


State Board Policies and Recommendations
• Basic technology competencies
• Computer Skills Curriculum Goals and Objectives
Personal Technology Staff Development Plan
• Self-assessed needs
• Assessed student needs
Long Range Staff Development Plan
• Community assessed needs
• Identified system goals and objectives
Site Technology Staff Development Plan
• Staff assessed needs
• Hardware and software availability
System Technology Staff Development Plan
• Long range plans
• Site based plans

TECHNOLOGY STAFF DEVELOPMENT OPPORTUNITIES 1995-96

WORKSHOP	DESCRIPTION	DATE	PLACE	TIME	COST
Introduction to DOS	Internal/External Commands, Pathing, Explanation of exe., bat. & com. Files, Boot Disk Creation, File Structure. Three two hours sessions.***	2/6, 2/13, 2/20	WMS	3:30 PM til 5:30 PM	No Cost*
Advanced DOS	Batch file Creation, Pathing, Memory Management, Compression Utilities, Hard Disk Management, Generic Utilities. Three two hour sessions.***	Spring '96 Dates to be announced	WMS	3:30 PM til 5:30 PM	No Cost
Introduction to Windows	Sizing Windows, Use of Menu Bars, Tool Bars, Dialog Boxes, Scroll Bars, File Manager. One 4 hour session.	Upon Request	WMS, PHS or THS	Upon Request	No Cost
Children's Writing and Publishing	General Use (letters, newsletters, simple desktop publishing), Lesson Plans & Integration Ideas for grades 2-5. One 2 hour session.	Upon Request	On Site	Upon Request	No Cost
Primary Editor Plus	Word Processing Basics, Lesson Plans, Integration Ideas, File Creation and Distribution on the Network for E-mail use in grades 1-5.	Upon Request	On Site	Upon Request	No Cost
Microsoft Works/DOS	Basic Word Processing, Lesson Plans & Integration Ideas customized for grades 3-12. One 3 hour session.	Upon Request	On Site	Upon Request	No Cost
Introduction to WordPerfect for Windows	(Preq. Basic Windows & Word Processing Skills) General Use, Haywood County Schools Templates Creation (Work Orders, P O's, etc.) Additional Form Creation, Tables and Graphics. Three 2 hr. Sessions.	Winter '96 Dates to be Announced	THS, OR PHS	3:30 PM til 5:30 PM	$120.00 Total Cost for Instructor
Introduction to Microsoft Works/DOS	Word Processing (2 hrs.)Word Processing Basics, File management in MSW. Data Base (2 hrs.) Introduction to Database Creation, Simple Search and Sort Commands, Lesson Plans & Ideas. Grades 3-8 Spreadsheet, (2 hrs.) Introduction to Spreadsheet Creation, Developing Charts & Graphs, Lesson Plans & Integration Ideas	Upon Request	On Site	Upon Request	No Cost
Introduction to Microsoft Works/Win	Word Processing (2 hrs.)Word Processing Basics, File management in MSW. Data Base (2 hrs.) Introduction to Database Creation, Simple Search and Sort Commands, Lesson Plans & Ideas. Grades 3-8 Spreadsheet, (2 hrs.) Introduction to Spreadsheet Creation, Developing Charts & Graphs, Lesson Plans & Integration Ideas. Prereq. Introduction to Windows or windows user.	Upon Request	THS, PHS, CMS,BMS WMS	Upon Request	No Cost

WORKSHOP	DESCRIPTION	DATE	PLACE	TIME	COST
Introduction to the Internet	Hands on experience accessing the Internet using Netscape Browser. Class is limited to 20 participants.** Administrative Personnel have priority to this session. (This class will be offered several times during the year however times and dates depend on scheduling at HCC. Principals will be notified of availability.)	11/07/95	High Tech Center	8AM til 10AM	No Cost
General Installations, Maintenance, & Peripherals	In this class you will learn how to setup and move equipment , printer self-test, trouble shooting and repair. Computer Systems, Modem , CD ROM and Sound Card Setups. Two 1&1/2 hour sessions.***	01/11/96 and 01/18/96	WMS	3:30 PM til 5:00 PM	No Cost
Introduction to the Bulletin Board System	Basics of logging on and using the menu system of the Haywood Community College Bulletin Board. Included are procedures for e-mailing, downloading and uploading files, live chats, conferencing, and acceptable use policy. One 1 hour session.***	Upon Request	On Site	Upon Request	No Cost
New Teacher Workshops	These workshops will familiarize new teachers with networked labs, the Integrade Program, Microsoft Works, technology lesson plans and will provide suggestions for integration of technology into the curriculum.	As scheduled by Staff Development Coordinator	As scheduled	As scheduled	No Cost
Emerging Technologies	These workshops are designed to elevate the classroom teacher's understanding of and comfort in a variety of "newer" technologies, as well as illustrate how these technologies can enhance the curricula. These workshops are also recommended for those teacher who are participating in the train the trainer program. See pages 16 & 17 for additional information.***	Elementary 10/30, 11/6 11/13 11/27,12/4 Middle 11/1, 11/8,11/15, 11/29, 12/6	IMC	3:30 PM til 5:30 PM	No Cost
Level I Assessment	Administration of Level I Computer Proficiency assessment. This includes setting up a class on the IBM network, assigning students to the class and setting up the software menu. Then accessing the software to create, edit, save, and delete files. Administration. (Must be administered by computer coordinator or computer resource teacher.)	Upon Request	On Site	Upon Request	No Cost
Level II Review in Preparation for Assessment	Review of Microsoft Works (word processing, database, spreadsheet) Telecomputing, Ethical Use Policy, Keyboarding, Terms and Societal Impact. (See Attachment)	Upon Request	On Site	Upon Request	No Cost

WORKSHOP	DESCRIPTION	DATE	PLACE	TIME	COST
Level II Testing (Multiple Choice Portion)	Administration of 50 multiple choice questions. Up to 30 participants. (Must be administered by computer coordinator or computer resource teacher.) ***	Upon request	On Site	Allow 1 hour for testing.	No Cost
Level II Testing (Performance Portion)	Administration of performance portion including: Keyboarding Techniques—10 min Word Processing Editing—10min Database Use...25 min Spreadsheet Use...15 min Because of the nature of test administration the maximum number of participants is 20.***	Upon Request	On Site When Possible	Allow 1 and ½ hours for testing.	No Cost
Introduction to Linkway Live!	Introduction to Multi Media authoring using IBM's very popular Linkway Program. This is a useful tool for teachers and students. Students can use it for electronic presentation of research projects, art and graphic design, and presentations using text, audio and video medium. Teachers can design lesson plans and presentations. Really easy way to get into multimedia authoring. This workshop takes a minimum of 4 hrs. with a 2 hr. follow-up session.***	Upon Request	WMS,BMS CMS, THS	Upon Request	No Cost
LAN SCHOOL	Learn to use the electronic chalkboard available to teachers in all middle and high schools on the EDLAN networks. Excellent teaching tool for projecting teacher screen during instruction. One, 1& ½ hr. session. (Excellent teacher tool.)	Upon Request	CHHS, CMS,BMS WMS, THS PHS	Upon Request	No Cost
IBM Basic Network Training	Basic use of the network labs, including: setting up classes, use of class management tools, reporting options and introduction to available software.	Ongoing	Upon Request	Upon Request	No Cost
IBM Intermediate Network Training	Build on basic skills and learn how to distribute files, use templates, change log in screens, and learn about network directories and pathing.	Ongoing	On site	Upon Request	No Cost
Third Grade Keyboarding Review	Review goals and objectives of the keyboarding curriculum. Third, fourth, and fifth grade keyboarding assessments will be evaluated as to their significance. A high school keyboarding teacher will discuss concerns and share some keyboarding techniques. New software correlated to the PAWS typing program will be introduced.	To be announced	To be announced		
Star Distance Learning Workshops	This is continuation of the Emerging Technologies Workshops for Elementary and Middle School teachers. See attached brochure. These workshops are being offered through TI-IN.***	See Brochure	IMC	3:30 til 5:30 PM	No Cost

WORKSHOP	DESCRIPTION	DATE	PLACE	TIME	COST
Train the Trainer	In this workshop teachers will learn how to provide staff development to other teachers. This workshop includes information on adult learning styles that can be applied in future sessions. DOS/Windows Basics and Word Processing will be used in this day long workshop. This workshop is highly recommended for all certified personnel who are participating in the train-the-trainer programs in the elementary and middle schools. (Limited to 24 participants.)***	11/17/95	WMS	8:30 AM til 3:30 PM	$50.00 per participant
The "T" Project	The "T" Project or "Teachers Training Teachers To Teach Technology", consists of two, four day workshops. One devoted to the organizing and development of elementary lesson plans for use by K-5 teachers to integrate technology into classroom instruction throughout the curriculum. Emphasis will be placed on integrated units at all grade levels. The second workshop will be devoted to organizing and developing middle school lesson plans. Special emphasis will be place on integrated units for grades 6, 7, and 8 with special focus on the incorporation of telecommunications and the use of the Internet. These workshops will involve train-the-trainer teachers from each elementary and middle school in the system. The lessons developed will be used by the trainers to in turn train teachers at each site. (Hopefully this will involve collaboration with Western Carolina University School of Education faculty members.)*** **Prereq. Level II status and participation in Star Schools, "Using Technology Effectively in the Classroom"******	Summer 1996 (Dates to be announced)	IMC, HCC, and WCU	4 days 8:30 AM til 3:30 PM	No Cost Participants will be paid stipends.

*No Cost assumes that you are using Central Office Staff and/or schoolsite staff members during planning or workdays. However, if you are using your staff trainers after school hours it has been agreed that they should be paid $20.00 per hour from school technology staff development funds. (Because of the amount and nature of technology staff development funds, stipends cannot be paid to teachers for taking training.) Whenever possible on site trainers should be utilized. Findings show that teachers respond well to training from colleagues. Teacher-trainers share curriculum integration ideas and strategies and are familiar with classroom resources. But to do the job right, they must have support and be provided with ongoing opportunities to update their knowledge and skills. System level personnel will be available for assistance in this area.
State technology staff development funds have been earmarked for elementary schools; therefore, middle and high school technology staff development costs will be paid through local technology staff development funds.

**Unless otherwise indicated the maximum number of participants should be kept to 15, this is especially true when working with beginner level students.

***These workshops are recommended for those teachers who will be participating in the train-the trainer program.

**** Final plans and dates for these workshops will be announced in the Spring of '96.

Additional Workshop availability will be posted in the Green Sheet.

United STAR
Distance Learning Consortium
Florida • Illinois • New Mexico
North Carolina • Texas

presents
A Renewal Credit Opportunity
via Satellite
sponsored by
North Carolina
Department of Public Instruction
Instructional Technology

"Emerging Technologies"
October 30 - December 6, 1995
Reference #: 95080110

&

"Case Studies and Applications"
January 15 - April 15, 1996
Reference #: 95080112

Renewal Credit information will be announced in registration materials.

Emerging Technologies
October 30 - December 6, 1995

Elementary
Mondays
3:30 - 5:30 p.m. ET

October 30	Introduction to Planning; Telecommunications
November 6	Data Collection through Portable Tools and Software
November 13	Data Collection through Visual Tools; Grantsmanship
November 27	Putting It All Together: Hypermedia
December 4	Planning & 22nd Century Technology

Middle School
Wednesdays
3:30 - 5:30 p.m. ET

November 1	Introduction to Planning; Telecommunications
November 8	Data Collection through Portable Tools and Software
November 15	Data Collection through Visual Tools; Grantsmanship
November 29	Putting It All Together: Hypermedia
December 6	Planning & 22nd Century Technology

Case Studies &Applications
January 15 - April 15

Elementary
Mondays
4:00 - 6:00 p.m.ET

January 15	Telecommunications
January 22	Video Production
January 29	Laser Discs & CD ROM
February 12	Hypermedia Authoring
February 19	Classroom Management

Middle School
Mondays
4:00 - 6:00 p.m. ET

February 26	Telecommunications
March 11	Video Production
March 25	Laser Discs & CD ROM
April 1	Hypermedia Authoring
April 15	Classroom Management

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Using Technology Effectively in the Classroom

The North Carolina satellite broadcast series, "Using Technology Effectively in the Classroom" began last spring with "Integrating Computers with Math and Science". The series resumes this fall with programs two and three to be broadcast during the 1995-1996 school year.

The first broadcast strand focused on the integration of one of the most basic school technologies--the computer. Hands-on activities prepared teachers to integrate the computer as an educational tool into their classroom.

In upcoming program strands, the focus progresses to include newer technologies being used in the classroom. Participants will also receive an in-depth look at how technology is being used effectively in our schools. "Emerging Technologies" and "Case Studies and Applications" will prove to be a valuable resource toward the technological development of elementary and middle school math and science teachers.

Each series will provide one renewal credit hour for participants. Make plans to be a part of these special educational opportunities.

Emerging Technologies

"Emerging Technologies" is designed to elevate the classroom teacher's understanding of and comfort in a variety of "newer" technologies, as well as illustrate how these technologies can enhance their curricula. In addition, programs will illustrate the range of technologies and costs to show how schools with even the smallest of technology budgets can begin incorporating these educational tools into the classroom. This series benefits all levels of technology experience. The novice will become aware of the many tools readily available to enhance daily lessons, while the technology experts will recognize additional means for further expanding their school's technology inventory and vision.

What you'll see: Internet, Desktop Videoconferencing, Portable Digital Devices (Keyboards, Notebooks, Assessment Tools), Probeware, Virtual Reality, Digital Cameras, CD_ROM, Laser Disc Players, Geographic Information System, Authoring Software& Hot Buttons, and Hypermedia.

Series one provided hands-on computer activities and a detailed lesson plan to complement classroom instruction. The second series introduces teachers to more innovative or "emerging" technologies and their uses, while series three brings it all together and shows how many North Carolina teachers successfully utilize technology in their classroom.

Case Studies and Applications

The three-part series concludes with a study on the philosophy and actual use of educational technology. How teachers are really using technology in their classrooms and how a teacher can replicate it, are just a few of the pressing questions which will be addressed. By taking an in-depth look at what some teachers have successfully integrated into their elementary and middle school math and science classrooms, participants can visualize the many ways technology can enhance their lessons too. In addition, "Case Studies and Applications" goes beyond actual lessons and highlights the outcomes of student learning, such as confidence in their ability to learn; teamwork/collaboration skills; and skills in testing, organizing and synthesizing information. Case studies, applications and hands-on activities are effectively integrated into the broadcast series to provide a well-rounded view of technology as a versatile classroom tool.

(The information on pages 16 & 17 are taken directly from the Star Learning brochure which introduces this series.)

Rowan-Salisbury Schools

MISSION POSSIBLE. YOUR MISSION: (should you choose to accept it). As a group, a team, to develop a comprehensive training packet for the technology competency strand assigned to your group. The following steps will aid in this packet development:

- Overview of the Competency Skills Breakdown
- Determine the sequence of skills
- Group or cluster the skills into modules (1-2 hours)
- Determine the prerequistes, terms, etc. for each module.
- Develop activities (or lessons) for the modules.
- Determine materials needed.
- Determine assessment (knowledge and/or performance)
- Follow-up Planning for materials development, outline, etc.

MODULE DELIVERY PLANNER
STRAND: Setup, Maintenance, TS MODULE: Troubleshooting
COMPETENCY NUMBER: 2.5
Group Names: Sharon Horton, A I Pozyck, DJ Brice

COMPETENCY DESCRIPTION: Use self help resources to diagnose and correct hardware/printing problems.

SKILL TO BE TAUGHT: Using manuals; utilities, hot lines to companies (hardware-software), keeping records of all maintenance/problems & source; TIPS sheet

PRE-REQUISITE TERMS/SKILLS: Hardware, printer

TERMS TO BE TAUGHT: Utility software; logs; hot line; TIPS

ACTIVITY/LESSON: 1) analogy of putting together a bicycle on Christmas eve, 2) simulation using a manual - something specific, 3) explanations of guides and handouts for MAC and IBM, 4) Use Norton Utilities, 5) discuss "logs" and importance of keeping good records.

MATERIALS NEEDED: (describe graphics, etc.): Examples of TIPS, "Do's and Don'ts", computer lab log, SAMS troubleshooting manuals (IBM and MAC), "Troubleshooting the Mac" handout, "Keeping Your Mac Smiling" handout.

ASSESSMENT: Develop a "problem log" for your school; demonstrate use of utility software, simulation of type of problem (Ex. blank screen)

Needs Assessment
Form: A Sample

STR	GL	1.0 COMPUTER OPERATION SKILLS	DK	K	U	AT	Acquisition of Skills (Self-taught, Inservice, courses)	Completion Date
		ESSENTIAL KNOWLEDGE & SKILL						
		Demonstrate these skills:						
TO	K-3	1.1 Start up and shut down computer system and peripherals						
		• Use correct startup/shut down procedure according to computer type						
		• Start up and shut down printer						
		• Start up and shut down CD-ROM						
		• Start up and shut down scanner						
TO	K-3	1.2 Identify and use icons, windows, menus						
		• Point, click, double-click, click and drag with mouse						
		• Maximize and minimize a window						
		• Use pull-down and expanded pull-down menus						
		• Select, open, and move an icon						
		• Select, open, move, and close a window						
		• Resize a window and title/stack windows						
		• Scroll up/down, left/right within a window						
		• Make a window active/inactive						
TO	2	1.3 Start an application and create a document						
WP	2-4	1.4 Name, save, retrieve, revise a document						
		• Name a document						
		• Save a document using both the Save and Save As commands						
		• Retrieve a document from floppy disk						
		• Retrieve a document from hard drive						
		• Rename a document						
		• Edit and re-save a document						
WP	2-4	1.5 Use printing options						
TO	K-3	1.6 Insert and eject floppy disk and CD-ROM						
CSU	9-12	1.7 Initialize, name/rename floppy disk and hard disk						
WP	9-12	1.8 Copy document from hard disk to floppy disk and vice versa						
CSU	9-12	1.9 Create and name/rename subdirectories/folders						
WP	2-4	1.10 Save, open, place documents inside subdirectories/folders						
CSU	9-12	1.11 Open and work with more than one application at a time						

DRAFT
[SAMPLE]

Page

Legend: DK= Do not Know
K = Know, but Need Additional Help
U = Know and Use
AT = Able to Teach
BOLD =Techaology Competencies

STR=Curriculum Strands
SS=Spreadsheet
SU=Societal Use
ET=Ethics
TO=Terms & Operation
WP=Word Processing
DB=Database
TC=Telecomputing
IS=Information Skills
CSU=Curriculum Software Use

GL=Student Competency Grade Level

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Note: See Attachment A for complete list of competencies

BASIC TECHNOLOGY COMPETENCIES FOR EDUCATORS

SELF-ASSESSMENT TOOL

Developed by
E.T.C.* Work Group

This document contains a sample assessment tool for the new Basic Technology Comptencies for educators. This is a multi-purpose document. It dissects the knowledge and skills, both essential and expanded, into easily assessed subsets. This document additionally aligns these Technology Competencies with the student Computer Skills and Information Skills Curriculum K-12. It can also serve as a personal record for educators, documenting the way skills are acquired and completion date of acquistion.

This document was developed for your convenience and use. You may choose to adapt it in any way to meet the special needs of your LEA or school.

[SAMPLE]

* Educator Technology Group

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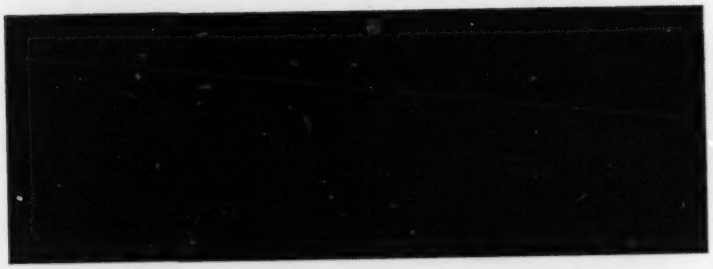

School Technology Inventory: An Example

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School Technology Scavenger Hunt ☆

In the boxes on the left, check the statements that apply to the capacities, tools, and resources that are present in your school. As you conduct your search for information, use the opportunity to ask questions and learn more from the principal, media coordinator, janitor, fellow teachers, and anyone else who knows about the technology capacity and resources in your school.

✔ The School Wiring Closet

- ❑ Copper Cable
- ❑ Coaxial Cable
- ❑ Fiber Optic Cable
- ❑ TV Antenna
- ❑ Satellite Dish
  Circle one: Movable Fixed

✔ Computer Capabilities

Find the computer in your school with the greatest memory capacity and record here:

Type of computer: _____

Memory size: _____ megabytes

Built-In Modem? Circle one: Yes No

✔ Internet Access

1. Do you have Internet access?
   Circle one: Yes No

If you circled yes:

2. Who is your provider?
   _____
3. How do you get to your provider?
   Circle one: Modem, Router, Network
4. Do you have software (such as Netscape or Mosaic) that enables you to "surf" the Net? Circle one: Yes No

✔ Emerging Technologies

- ❑ Portable Keyboards
- ❑ Personal Digital Assistants
- ❑ Probeware
- ❑ Digital camera
- ❑ CD ROM players and discs
- ❑ Laser video discs
- ❑ Multimedia authoring software
- ❑ Bar code readers
- ❑ Geological Information Survey software
- ❑ Virtual Reality software

✔ E-Mail Software

1. Do you have E-mail software? ❑ Yes ❑ No 2. Which software?_____

UNC Educational Consortia

Appalachian State University
Elizabeth Long, Public School Partnership, Phone (704) 262-6108; FAX (704) 262-2128; longew@appstate.edu

East Carolina University
Eastern North Carolina Consortium for Assistance and Research in Education (ENCCARE) Emmett M. Floyd, Director, Phone (919) 328-6208; FAX (919) 328-4153; edfloyd@eastnet.educ.ecu.edu

North Carolina Central University
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University of North Carolina at Chapel Hill
Center for Educational Leadership (CEL), Robert C. Kanoy, Director, Phone (919) 966-8000; FAX (919) 962-1533; rckanoy@email.unc.edu

University of North Carolina at Charlotte
UNC Charlotte Educational Consortium, Office of Education Outreach, Donna Prendergast, Coordinator, Phone (704) 547-2760; FAX (704) 547-4705; deprende@email.uncc.edu

University of North Carolina at Greensboro
Piedmont Triad Horizons Alliance Education Consortium, Frances Jones, Director, Phone (910) 334-3487; FAX (910) 334-4093; jonesf@iris.uncg.edu

University of North Carolina at Wilmington
Consortium for the Advancement of Public Education (CAPE), Dr. Edwin L. West, Jr., Director, Phone (910) 962-3873; FAX (910) 962-4081; westel@unccwil.edu

Western Carolina University
Alliance of Business Leaders and Educators (ABLE), Phil Monk, Phone (704) 227-7415; FAX (704) 227-7388; pmonk@wpoff.wcu.edu

Regional Education
Service Alliances/Consortia

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Northeast Region Education Service Alliance
Jeanne Meiggs, Director
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(919) 232-3035
FAX: (919) 232-2257

Northwest Region Education Service Alliance
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FAX: (910) 667-0503

Central Carolina Center
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VOICE MAIL: (919) 544-7683

Southeast Education Alliance
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FAX: (910) 938-3879

Roanoke River Valley Consortium
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Sandhills Region Education Consortium
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FAX: (704) 547-2110

Western Region Education Service Alliance
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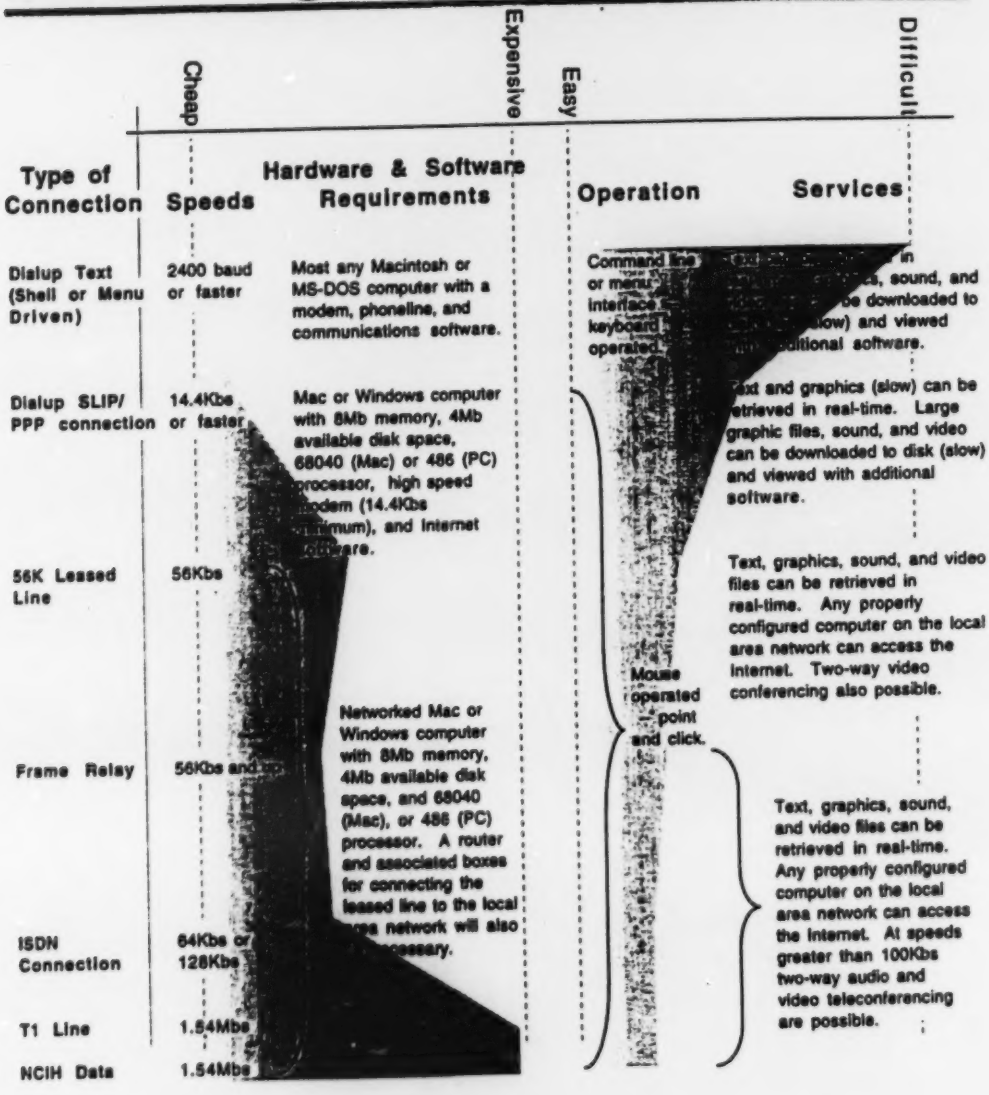
Piedmont Triad Horizons Ed. Consortium
Frances Jones, Executive Director
University of North Carolina at Greensboro
245 Ferguson Building
Greensboro, North Carolina 27412
(910) 334-3487
FAX: (910) 334-4093

Internet Access Options

Connecting to the Internet


Cheap
Expensive
Easy
Difficult
Type of Connection
Speeds
Hardware & Software Requirements
Operation
Services
Dialup Text (Shell or Menu Driven)
2400 baud or faster
Most any Macintosh or MS-DOS computer with a modem, phoneline, and communications software.
Command line or menu interface keyboard operated.
Text and graphics (slow) can be retrieved in real-time. Large graphic files, sound, and video can be downloaded to disk (slow) and viewed with additional software.
Dialup SLIP/ PPP connection
14.4Kbs or faster
Mac or Windows computer with 8Mb memory, 4Mb available disk space, 68040 (Mac) or 486 (PC) processor, high speed modem (14.4Kbs minimum), and Internet software.
56K Leased Line
56Kbs
Text, graphics, sound, and video files can be retrieved in real-time. Any properly configured computer on the local area network can access the Internet. Two-way video conferencing also possible.
Mouse operated point and click.
Frame Relay
56Kbs and
Networked Mac or Windows computer with 8Mb memory, 4Mb available disk space, and 68040 (Mac), or 486 (PC) processor. A router and associated boxes for connecting the leased line to the local area network will also be necessary.
Text, graphics, sound, and video files can be retrieved in real-time. Any properly configured computer on the local area network can access the Internet. At speeds greater than 100Kbs two-way audio and video teleconferencing are possible.
ISDN Connection
64Kbs or 128Kbs
T1 Line
1.54Mbs
NCIH Data
1.54Mbs

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Attachment H

Summary Description of Eisenhower Year Eight Projects

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SUMMARY DESCRIPTION OF EISENHOWER YEAR EIGHT PROJECTS

05. Appalachian State University. ***The Science of Mapping Institute: Grades 4-8 Teachers -- from the Mountains to the Coastal Plain.*** **Dr. James Young, Project Director. $29,808. Project Service Area: Watauga, McDowell, Alexander, Alleghany, Ashe, Avery, Burke, Caldwell, Catawba, Davie, Iredell.**

The Science of Mapping Institute is based on the premise that young learners are capable of acquiring an awareness of their physical and cultural environment and can develop strategies for studying and solving those challenges. Maps are one of the most important tools in the study of spatial relationships between phenomena and are valuable tools for many disciplines. Many teachers lack the formal training to help their students learn about physical and cultural environments. To help address this lack of mapping skills, twenty-four grade 4-8 teachers will attend an intensive two week institute to be held in June 1997. These teachers will acquire the content, teaching strategies, and materials needed to use maps as tools of scientific and geographic inquiry. Teachers will also develop computer skills that can be used in the classroom. Teachers can earn five recertification credits during the institute plus one additional credit at the follow-up sessions.

Appalachian State University. ***Bridging Elementary School Mathematics to Science and Other Disciplines through*** **Statistics. Dr. Steven E. Dyche, Project Director. $27,861. Project Service Area: Burke, Catawba, Iredell Counties; Newton-Conover, Hickory, Lexington, Thomasville City Schools.**

The NC Standard Course of Study as well as the NCTM Curriculum Standards call for the inclusion of data collection and/or probability and statistics in the elementary school mathematics curriculum. Additionally, students need to learn about the connections between mathematics, science, and social studies. North Carolina has a cadre of elementary teachers trained in the use of basic statistics through an earlier NSF grant, Teach-Stat. However, only two such teachers can be found in the LEAs targeted in this project. Therefore, twenty-four elementary teachers from these LEAs will spend eight weekends at the Catawba Science Center and four days at ASU studying basic statistics, data collection, and interpretation. The weekends in Hickory will be spread over the academic year; the four days on campus will be consecutive days during summer 1997. Teachers will participate in a myriad of activities which they can use to collect and analyze data. Lessons designed for the institute will be in-line with the NC Standard Course of Study and will also have a technology base. Participants will develop their own grade-appropriate lessons showing connections between mathematics, science, and social studies; they will use data collection and basic statistics as the unifying theme.

East Carolina University. ***Using Videodisk Technology to Facilitate Teachers' Instructional Strategies for Teaching Core Mathematics Concepts to At-Risk Students in Grades 3-5.*** **Dr. Michael R. Vitale, Dr. Barbara Scott, Project Co-Directors. $29,982. Project Service Area: Wilson County.**

The design of this project evolved through a collaborative project focusing on math and reading at Elvie Street School and the Laboratory for Applied School Research at East Carolina University. Through that process, teachers were able to explore videodisk mathematics programs focusing on fractions, decimals/percents, and a variety of word problems. The resulting rationale of the project that was developed consists of three parts. The first uses segments of the videodisk materials to enhance teachers' own intuitive understanding of mathematics concepts and problem solving strategies and to model key questioning skills in mathematics instruction. The second enhances teachers' skills in applying the intuitive understanding gained through the videodisk technology to classroom practice. Procedures to be used include: stating instructional objectives; demonstrating learning examples; using questioning strategies; and assessing student mastery. The third includes teacher collaboration strategies for peer coaching. Implementation of the professional development project will consist of a total of seventy-two direct contact hours.

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East Carolina University. ***(EC)MATH: Raising the Power of Mathematics in Edgecombe County.*** **Dr. Karen R. Dawkins, Project Director. $29,998. Project Service Area: Edgecombe County.**

Edgecombe County Schools show scores below the NC average in end-of-grade and end-of-course tests in all four of the criteria for determining low-performing schools these scores indicate a compelling need for assistance with instruction. Specifically, the percentage of students in grades 3-8 scoring at or above grade level in mathematics was fifth from the bottom among all North Carolina counties. The rationale for the project is the assumption that exemplary instruction which incorporates appropriate technologies in mathematics classrooms can improve student achievement, especially as it is related to problem-solving and critical thinking.

Through this course middle and high school will enhance their abilities to integrate technology into their classrooms in appropriate ways. High school teachers will receive 66 hours of professional development instruction during the 1996-97 school year and a week-long summer workshop, both of which will specifically connect technologies to state curriculum objectives. Under the leadership of high school teachers, the middle school teachers will receive instruction in integrating technology into the 6-8 math curriculum in a summer workshop and will continue their focus on real-world problem-solving with a week-long workshop in the *Connected Math* curriculum program. Counting the eighteen-hours of professional development which the middle grades math teachers will receive (not funded by this grant) as a foundation for the technology workshop, they will receive a total of 60 hours of professional development with at least ten hours of follow up. It is expected that participants will increase their knowledge of mathematics content and their skills in using technology.

East Carolina University. ***Improving Mathematical Thinking Skills in the Context of Scientific Problem-Solving.*** **Dr. Karen R. Dawkins, Project Director. $30,000. Project Service Area: Hertford County.**

In the development of their school improvement plans, Hertford County teachers indicated mathematics and science as content areas in which they felt they had weaknesses and in which their students were performing below average. Targeting the entire faculties of both schools, this project will focus intensively on the needs indicated by these teachers. The course will focus on: increasing teacher knowledge in the life science, earth science, and physical science strands of the K-5 curriculum (Standard Course of Study); modeling exemplary instructional methodologies; identifying points in the science content where mathematical skills can be applied; using technologies already present in the two schools for science and mathematics instruction; facilitating improved instructional practices which incorporate sound content knowledge, exemplary instruction, and appropriate technologies; and (5) providing assistance in the development of assessments which equitably and authentically measure student achievement in mathematics and science.

Content experts from the fields of biology, chemistry, earth science, physics, and mathematics will provide coordinated instruction; instruction will tke at the school sites, on field trips to the Outer Banks, or in a five-day intensive summer workshop. After receiving instruction in peer coaching and with assistance from the project director and principals, participants will assist each other in implementing the kinds of instructional practices addressed in the workshop.

East Carolina University. ***Physical Science and Process Skills for Elementary Teachers.*** **Dr. Scott Watson, Project Director. $29,136. Project Service Area: Nash-Rocky Mount.**

The *Physical Science and Process Skills for Elementary Teachers* project will provide teachers from the Nash-Rocky Mount school system with extensive training in use of the science process skills in teaching physical science to elementary students. The ten-day workshop and two follow-up sessions will be devoted to: (1) using process skills and hands-on activities appropriate for young children; (2) offering strategies for using computers in gathering resources for science instruction; and (3) integrating science with other subject areas.

East Carolina University. ***Coastal Plains Environmental Education Institute.*** **Dr. Michael Slattery and Dr. Paul Gares, Project Co-Directors. $29,999. Project Service Area: Pitt, Greene, Lenoir, Jones, Wilson, Beaufort, Wayne, Martin, Edgecombe Counties.**

This project will support a summer workshop for middle grade teachers that focuses on the physical characteristics of the eastern NC coastal plan; moreover, it will allow time for participants to examine regional environmental issues. The institute is based on the premise that young learners are capable of acquiring environmental education concepts and that the solution of environmental problems begins with an awareness of these problems at a very young age. Unfortunately, many of the schools in eastern NC have little, if any, science materials other than a text to educate students about environmental problems and frequently teachers are ill-prepared to teach science. An intensive two-week institute will therefore be held for 25 teachers from eastern NC. Participants will be presented with information about the physical systems of the eastern coastal plain (i.e., climate, soils, hydrologic, estuarine and coastal systems) and about contemporary environmental problems associated with those systems; they will develop teaching strategies and materials designed to convey this information to their students in an enthusiastic manner; and they will be better able to use their local environment as a laboratory in which students will make observations, analyze phenomena, and develop a greater understanding of their environment. A major focus of the institute will be technology, in particular, how to make effective use of technology as a tool for enhancing science education.

Fayetteville State University. ***Preparing K-5 Mathematics and Science Teachers to Teach Mathematics and Science to Learning Disabled Students.*** **Dr. Frederick Smith, Project Director. $27,451. Project Service Area: Sampson County.**

The need for providing activities for learning-disabled students is supported by the fact that 4.6 percent of NC public school children are diagnosed as specific learning disabled. In Sampson County 350 K-5 students were identified as such and received services in regular mathematics and science classes. This course will therefore: increase participants' knowledge of learning disabilities and instructional strategies in mathematics and science for addressing the needs of these students; enhance the confidence and skills of teachers in working students with learning disabilities through the use of hands-on mathematics and science activiteis; increase participants' knowledge of the NC Standard Course of Study in mathematics and science; and model demonstrations for teachers in math and science and have them conduct demonstrations. Fifteen K-5 teachers who are presently teaching students with learning disabilities will participate in this program and will receive ninety contact hours of instruction.

Fayetteville State University. ***Elementary Intech Project.*** **Dr. Leo Edwards, Project Director. $29,602. Project Service Area: Bladen, Hoke, Robeson, Harnett, Sampson Counties.**

Twenty-four K-6 teachers from southeastern NC will receive instruction in the use and integration of technology in the classroom. They will then assist in the replication of such technology workshops throughout this region. This model is based on an NSF-funded professional development program in technology which has been designed and disseminated by the Miami Museum of Science. Workshops will focus on six math/science/technology modules promoting hands-on/minds-on cooperative experiences for teachers and students.

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North Carolina State University. ***Exploring Geometry with Technology For Teachers of grades 4-8.*** **Dr. Sarah Berenson, Project Director. $29,999. Project Service Area: Wake County.**

In the "MSEN Middle Grades Assessment" (1993) it was found that more than half of the 446 middle grade math teachers surveyed had never taken a university geometry course. Additionally 35% of the teachers were interested in a course in using computers and calculators to teach math. In respond to this need, the NCSU Center for Research in Mathematics and Science Education developed a course that will provide a minimum of 60 hours of professional development for up to 15 teachers in grades 4-8 in using technology to teach geometry. Two follow-up days of instruction will be provided by the center. Through this course teachers will: (1) review geometry concepts including angle, area, volume, transformations, congruence, similarity; (2) learn to use Geometer's sketchpad, draw programs, spreadsheets, graphing, calculators, and software to produce multimedia slide shows; (3) develop curriculum materials for student investigators that engage students in using appropriate technologies.

North Carolina State University: The Science House. ***Using CBL and MBL to Measure the World.*** **Dr. David G. Haase, Project Director. $30,000. Project Service Area: Caldwell County.**

In the initial phase of what will become a county-wide training program, Caldwell County Public Schools and the Science House of NCSU will develop an integrated curriculum enhancement program and provide a twelve-day training experience for twenty teachers. The participants in the program will learn to use MBL and CBL equipment for their science and mathematics classes; they will explore how to use this technology in learning activities that integrate mathematics and science; and from their explorations they will author learning modules that will be used in their own classrooms. The learning modules will be tested by the group of teachers and used as a base for future teacher training programs. The present program will be the base of a more comprehensive program which has already been planned and for which funding is being sought.

University of North Carolina at Chapel Hill. ***Using Plants to Teach Science (UPS).*** **Ms. Lin Frye, Project Director. $30,000. Project Service Area: Durham County Schools.**

Using Plants to Teach Science is a joint project of the University's math and science center and the National Gardening Association and will follow the National Garden Association's *Growing Science Inquiry Project.* Twenty-four K-5 teachers from six schools in Durham County will participate in this project which will consist of a five-day summer institute plus five instruction days and two follow-up workshops to be held during the school year. The course will focus on science content and inquiry process skills through the implementation of science gardens in schools; these science gardens will then function as living laboratories. The emphasis of the program will be life-science concepts and process skills; and, since the program materials are interdisciplinary and because the program is designed to support the state's new ABC Plan, the project will also integrate and model writing, reading, mathematics content, and social studies. Participants will use the activity guides *A Growing Classroom* and *Grow Lab* which model inquiry and process skills. All activities will be correlated to the NC Standard Course of Study content areas and the requirements of the National Science Standards.

Through the course participants are expected to deepen their knowledge of life and plant science, increase their use of inquiry and process skills, and create interdisciplinary units combining science with mathematics, reading, writing and social studies. Participants will be able to use the learning cycle model, apply current educational pedagogies such as constructivism, and create appropriate assessment tools to measure their students' progress. Finally, each participating school will have a viable indoor/outdoor garden as a living laboratory.

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University of North Carolina at Chapel Hill. ***Project MASTT: Mathematics and Science Technology Tools.*** **Dr. Patricia Bowers, Project Director. $30,000. Project Service Area: Alamance, Chatham, and Granville County Schools.**

The school systems targeted by this project have the common need of meeting the technology competencies developed by the State Board of Education and improving the achievement of minority students. More specifically, teachers in these LEAs need to learn to use technology as a tool for instruction in science and mathematics, and they need to develop strategies to overcome bias in instruction. This course is designed to develop participants' abilities to use technology as a tool for instruction in student-centered science and mathematics classrooms and to decrease the bias of teachers in the classroom, therein leading to increased achievement of females and minority students. Participants will learn how to incorporate technologies such as desktop publishing, databases, spreadsheets, CD ROMS, laser discs, electronic mail, the World Wide Web, video cameras, probeware, and multimedia presentations into classroom instruction. They will also learn how to incorporate strategies that have been shown to decrease bias in instruction into their instruction. The focus is on active involvement of the participants at all stages of the course.

University of North Carolina at Chapel Hill. ***Engaging Students by Linking Earth and Science Investigations with Current Events.*** **Dr. Cynthia Copolo, Project Director. $29,783. Project Service Area: Cumberland, Hoke, Robeson, Sampson, Scotland Counties.**

This project will assist teachers in using current events to make scientific inquiry relevant and interesting to secondary school students. This instructional approach will link basic skills and process skills to events that have recently had an impact on students. Fifteen teachers will attend a 2-week summer workshop in which they will construct instruments and investigate water-quality at local sampling sites,; they will then relate the results to the local drainage basin, the major rivers, the estuaries and the North Carolina coast. The BSCS inquiry-based approach will be used to design activities which meet NC DPI science objectives. Teachers will develop an Action Plan for their classroom which includes student-led investigations. One-day fall and spring follow-up meetings will also be held. These follow-up meetings will provide teachers with the opportunity to revisit their Action Plans, share developed lessons, and gain additional skills and knowledge.

University of North Carolina at Chapel Hill. ***Integrating the ABCs Through Science for the Early Grades.*** **Dr. Gail Jones, Project Director. $30,000. Project Service Area: Bertie, Halifax, Hertford, Northampton.**

Developed by teachers and administrators from Bertie, Halifax, Hertford and Northampton Counties, this project addresses three areas of immediate concern: (1) implementation of the ABC Plan at the primary level; (2) general improvement of science instruction; and (3) the use of technology in the primary classroom. A two-week summer institute will improve primary teachers' science content knowledge as well as provide them with inquiry-centered science and technology activities they can use with their students. The institute will be centered on two major themes: (1) Changes and Measurement, and (2) Questions, Patterns and Predictions. Teachers will also learn how to use networking software to access the Internet for resources and to communicate with outside professionals and other teachers. Science teaching materials and resources will be provided throughout the institute and will help motivate participants to increase the amount of time science is used to teach other content areas. The twenty participating K-3 teachers will draw on these experiences to design and plan lessons integrating concepts and teaching strategies with mathematics, reading, writing and technology. These plans will be disseminated to other interested teachers within participating schools and counties.

University of North Carolina at Chapel Hill. ***Exploring Biological Change.*** **Dr. Jean DeSaix, Project Director. $30,000. Project Service Area: Chatham and Caswell Counties.**

During the two-week summer workshop teachers will explore organismal topics through inquiry investigations. For example, teachers will make trips to the NC Zoological Park, the NC Botanical Garden, and fossil localities of NC to do field studies of structure-function adaptations. Each day will include at least seven hours of activities.

The first week of the project will emphasize organic variation as the basis of adaptations through biological change from generation to generation. The second will concentrate on evidence of change as seen in the fossil record. The evidence for evolution will be contrasted with theories about how evolution has proceeded. It is anticipated that participants will understand that organismal biology is not strictly observational in nature, but rather that hypothesis testing is appropriate and is used by professionals in the discipline to develop theories about biological change. Further, teachers are expected to have a rational, defensible foundation for their own curricular decisions regarding controversial organismal topics such as dissection, organic change and adaptation. Teachers will know how to use instructional methods which reduce anxiety about dealing with differing perspectives on these issues and which use technology to access information in the arena.

University of North Carolina at Chapel Hill. ***Operation Primary Physical Science.*** **Dr. Gail Jones, Project Director. 30,000. Project Service Area: Columbus, Bladen, and Robeson Counties.**

Operation Primary Physical Science is designed to help teachers of grades K-3 in Bladen, Columbus and Robeson Counties teach physical science. The intensive two-week summer institute will be followed by two days of follow-up held during the following academic year and will be taught by a three-person leadership team composed of a university science educator, an early childhood science educator, and a master elementary teacher.

The project will assist teachers in developing science instruction around four organizing themes: 1) Properties and Behavior, i.e., students will develop skills in being able to identify and describe the characteristics of various physical objects both quantitatively and qualitatively; 2) Constancy and Change, i.e., most things undergo predictable patterns or cycles of change, although the rate or scale of change may vary; 3) Interactions, i.e., a few simple physical laws can be used to explain a wide variety of interactions; and 4) Systems, i.e., the components of a system are interdependent. A spiral approach will underpin the structure of the institute; i.e., major physical science topics are periodically revisited in varying contexts and depths in the different theme investigations.

As a result of this project, twenty teachers of grades K-3 will be more knowledgeable about physical science concepts, will be able to design effective science lessons that are developmentally appropriate, inquiry-based, and use science as a platform for integrating mathematics, reading, and writing. Teachers will also be able to use science process skills in teaching and assessing science with their students. Finally, teachers will be able to use strategies that have been shown to be effective for teaching girls, minorities, and rural, and low socioeconomic students.

The University of North Carolina at Chapel Hill. ***Middle Grades Mathematics Tools and Technology Project.*** **Ms. Patricia Kernodle and Dr. Russell Rowlett, Project Directors. $30,000. Project Service Area: Durham County.**

This project represents Durham Public Schools' response to recent reforms made in mathematics teaching at the middle grades level by the NCTM Standards for Curriculum and Evaluation and the NC Department of Public Instruction. It seeks to address the current shift in mathematics teaching from rote memorization toward more meaningful and active student involvement through the use of interactive mathematical tools and technology. The goal of the project is to provide material resources, instructional strategies and support during implementation for twenty middle grades mathematics teachers within previously determined low-performing schools. The project begins with an intensive two-week institute scheduled during summer 1997 and will include two formal days of follow-up. Daily activities will include: (1) hands-on experiences using concrete manipulatives from middle grades mathematics kits; (2) interactive computer sessions in the use of the Internet, Geometer's Sketchpad, database spreadsheets and statistical packages; (3) interactive experiences with calculators; (4) examinations of state and national mathematics standards; (5) pedagogy; (6) alternative assessment; and (7) common planning time. Additional follow-up will include classroom observations, journal reflections, teacher interviews, surveys, postcard check-ins, and a mathematics attitude survey.

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University of North Carolina at Chapel Hill. ***Vance County Mathematics Program.*** **Dr. Carol E. Malloy, Program Director. $28,437. Project Service Area: Vance County.**

The goals of the *Vance County Mathematics Program (VCMP)* are to provide mathematics teachers in grades 7 through 9 with: (a) student-centered mathematics pedagogy and materials to help increase the achievement of Vance Count students, and (b) structures that will enable collaboration in planning and classroom instruction. will begin with a three hour awareness session to familiarize teachers with the goals of the workshop, the need for reflection, equity projects, and the processes that will be used in VCMP. Summer classes will run five hours a day over a two week period. During the academic year and the following summer the teachers will participate in six, three-hour follow-up sessions on Saturdays. The instructors will also visit participants' classrooms to support the changes to pedagogy. VCMP will address teacher beliefs, mathematics, pedagogy, instructional materials (including technology), and equity. Throughout the program, teachers will use a collaborative process.

University of North Carolina at Charlotte. ***Interactive Physics Through the Internet for Middle and Secondary Teachers.*** **Dr. Yildirim Aktas and Dr. Josephine Wallace, Project Directors. $29,996. Project Service Area: Anson County, Charlotte-Mecklenburg, Cleveland County, Kings Mountain, Gaston, Richmond, and Rowan-Salisbury County Schools.**

This course is designed to strengthen participants' science content knowledge and teaching skills in physics. IT will focus most particularly on internet and multimedia tools that use discovery, tutorial, problem-solving, data analysis, simulations, and review approaches. Teacher participants will learn how to: use email; access internet resources; and develop and use physics simulations to examine physical quantities such as velocity, acceleration, momentum, angular momentum, kinetic energy, and friction force. An instructional team comprised of a physics faculty member, a science education faculty member, and master teacher will provide instruction correlated to the NC Standard Course of Study and use the Learning Cycle Approach to teaching and learning. Teachers will learn how to use the *Interactive Physics* Program, a program that combines simple user interface with a powerful engine that simulates the fundamentals of Newtonian Mechanics. They will also use *Astound* software to create their own lessons, simulations, and exercises for students. The Classroom Applications they develop will be available to other teachers via hard-copy and on the internet at the local, regional, state and national levels. Twenty teachers will be selected to participate based on MSEN selection criteria guidelines. A team of teachers will be selected from each of the seven participating school districts.

University of North Carolina at Charlotte. ***Super Science Connections: Internet Workshop for Teachers.*** **Dr. Cheryl B. Dammann and Dr. Josephine D. Wallace. Project Directors. $29,372. Project Service Area: Anson, Cleveland, Gaston, Richmond, Union, Stanly, Rowan-Salisbury Counties.**

Twenty teachers from southwest NC will participate in this project which will focus on the integration of physical science and science process skills at the K-3 level. In collaboration with the UNC-C Chemistry Department, the Math/Science Education Center, and ICE, trained lead teachers will present the following physical science themes: (1) color and light; (2) insulation; (3) matter and its forms; and (4) states/properties of water. An introduction to the Internet will include the use of e-mail, web basics, using search engines, and downloading software. At the workshop's conclusion, participating teachers should be able to : (1) demonstrate increased understanding of physical science themes; (2) relate science activities to the revised NC science curriculum program goals; (3) utilize and integrate hands-on science instruction with K-3 subject areas; (4) learn how to use e-mail and access information from the Internet; (5) use the learning cycle approach in science teaching; and (6) learn about laboratory safety and sources from which to obtain supplies. In order to reinforce the concepts learned, teachers will make presentations at the fall 1997 NCSTA meeting.

University of North Carolina at Charlotte. ***Cabarrus-STAT.*** **Dr. Mary Kim Prichard, Project Director. $29,999. Project Service Area: Cabarrus County.**

Thirty elementary teachers from Cabarrus County will be selected to participate in this project -- two teachers from each of the public schools in Caberrus County and at most three teams of teachers from private schools. An after-school workshop will be held by the project director and will focus on recommendations from the NCTM Standards documents related to statistics instruction. It will also give teachers an overview of the process of statistical investigation. A two-week summer institute will be held in Cabarrus County in July 1997. The workshop will use an investigative approach to help teachers develop their knowledge of statistics; it will also focus on the processes of statistical investigation, methods for teaching statistics, and ways to integrate statistics throughout the elementary curriculum. Follow-up meetings will be held several times through the 97-98 academic year. Participants will organize and plan Family STAT-Night activities that will be presented during March 1998.

University of North Carolina at Greensboro. ***Technology Tools for Science and Mathematics Learning.*** **Dr. Gerald Meisner and Dr. Harol Hoffman, Project Co-Directors. $29,999. Project Service Area: Thomasville City Schools.**

As indicated by a needs assessment, Thomasville teachers lack the professional preparation they need in order to implement appropriate applications of technology; this need is directly addressed by the TechTools professional development training program.

The Thomasville improvement plan calls for staff development activities which prepare teachers to use technologies that can enable students to engage in the scientific endeavors of formulating hypotheses, gathering and analyzing data, and communicating results. Through this course, participants will increase their technological knowledge base, increase their ability and desire to use technology in the classroom; increase their understanding of science concepts; increase their understanding of the nature and process of science and of scientific tools; achieve greater autonomy in the classroom as a result of increased access to information; increase their contact with scientists, educators, and other experts through World Wide Web participation; and improve support systems that promote the development of joint projects among teachers and between schools and that alleviate classroom teachers' feelings of isolation and stress.

University of North Carolina at Greensboro. ***Technology Tools for Elementary Science and Mathematics.*** **Dr. Harol Hoffman and Dr. Gerald Meisner, Project Directors. $30,000. Project Service Area: Rockingham County.**

The Rockingham County School System has identified a major gap in their teachers' professional preparation in the area of technology knowledge and appropriate applications. Technology Tools will make use of readily available, inexpensive softwares which will complement and enhance the existing school curriculum for grades 3-5. Instructors will design the workshop to promote the following outcomes. Educators will: increase their knowledge and familiarity with instructional resources for technology integration; (2) increase their ability and desire to use technology in the classroom; (3) increase their understanding of science concepts; (4) increase their understanding of the process of science and scientific tools; (5) achieve greater autonomy in the classroom as a result of increased access to information; (6) increase contact with scientists, educators, and other experts via the Internet; and (7) increase support systems in order to allow development of joint projects among teachers and between schools. Upon their return to the classroom, participants will conduct staff development activities and mentor two additional teachers within their home school.

University of North Carolina at Greensboro. ***Teaching Problem Solving Based on Children's Thinking: Cognitively Guided Instruction.*** **Dr. Nancy Nesbitt Vace, Project Director. $30,000. Project Service Area: Thomasville.**

An assessment survey of teachers from Thomasville Primary School indicated mathematics, particularly problem-solving, to be an area of need for professional development. In response to this need, a series of in-service workshops will be conducted in spring and summer 1997. All workshops will focus on cognitively guided instruction (CGI) in mathematics education and will include problem-solving computer software and calculators. Classroom sets of calculators and overhead calculators have already been donated for use. The program is expected to: (1) allow teachers to implement CGI during mathematics instruction; (2) increase teacher expertise in planning instruction based on children's mathematical thinking; (3) assist teachers in the integration of computer generated problem-solving; and (4) encourage the use of calculators during instruction. Two follow-up sessions are planned for Fall 1997. Additionally, experienced CGI teachers will act as peer mentors for all new participants implementing CGI in the classroom.

University of North Carolina at Pembroke. ***Expansion of NRTS at ECSU/UNCP Services to Include Purnell Swett High School.*** **Dr. Jose D'Arruda, Project Director. $30,000. Project Service Area: Robeson County.**

This proposal aims to expand the partnerships and activities of the Network Resources and Training Site (NRTS) to include the staff and students of Purnell Swett High School in Robeson County. In summer 1997 fifteen staff members will participate in a two-week workshop promoting the integration of the Internet into classroom activities. Various field trips and visiting lecturers will be incorporated into the workshop.

University of North Carolina at Wilmington. ***Mathematics Teacher Professional Development Using the World Wide Web.*** **Dr. Paul G. Shotsberger, Project Director. $28,281. Project Service Area: Brunswick, New Hanover, Pender Counties.**

The three primary goals of this project include: strengthening the mathematics instruction of high school teachers in public and private schools in Brunswick, New Hanover, and Pender Counties; assisting teachers in meeting state-mandated technological competency goals; and providing support for teacher change through the use of the World Wide Web. Schools that already possess a WWW connection will nominate a total of twenty-one teachers to attend four days of face-to-face training during summer 1997. The summer instructional phase will focus on navigating the WWW, publishing Web-pages, and employing computer collaborative tools. Participants will then engage in thirty hours of distance training using the WWW during Fall 1997. The latter portion of the project will focus on teacher training in and application of the principles of the NCTM *Professional Standards* in their classes. Ten hours of follow-up will be conducted over two days, one to be held in Fall 1997 and one to be held in Spring 1998.

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Wake Forest University; Bowman Gray School of Medicine. ***The Problem-Based Learning Initiative: Building Teacher Partnerships in Math and Science Education.*** **Dr. Liza Cariago-Lo, Project Director. $29,873. Project Service Area: Winston-Salem/Forsyth, Yadkin, Stokes Counties.**

Twenty math and science teachers from Winston-Salem/Forsyth, Yadkin and Stokes County School Districts will be recruited to participate in *The Problem-Based Learning Initiative* (PBL). This sustained and intensive professional development program will provide these middle and high school teachers with the opportunity to get hands-on training in PBL case development and teaching strategies, introduce teachers to the many uses of technology in PBL, provide information regarding implementation and evaluation of PBL, and make resources and materials available for teachers using PBL instruction. The teachers in the PBL project will (1) attend two 5-hour workshops in November 1996 and March 1997 to introduce them to the philosophy of PBL and its utility in math and science classrooms; (2) attend a week-long Summer Institute in July 1997 for further training; and (3) attend five 2-hour follow-up meetings held between September 1997 through March 1998 to foster networking among teachers and to build on their PBL skills. Four mentor teachers (previously trained with PBL) will serve as partners throughout the year and will continue to serve as resources for the newly-trained teachers. PBL trainers from Bowman Gray will conduct classroom visits with teachers to monitor their use of PBL.

Western Carolina University. ***Graphical and Numerical Meaning in AP Statistics.*** **Dr. J. Ralph Devane, Project Director. $29,749. Project Service Area: all counties in the western service region.**

Beginning in May 1997 an AP Nomination in Statistics will be administered by the Educational Testing Service. The content of the course requires a prerequisite no higher than Algebra II. Thus, collegiate-level study in mathematics is accessible to a much wider audience of high school students. Moreover, because the number of students enrolling in majors that use statistics, such as psychology, business, health science, sociology, and engineering, has grown dramatically in recent years, the AP statistics course addresses a practical need while affording high school students an intellectually challenging experience. Therefore a course in AP statistics will be offered to seventeen teachers in the western region of NC. The course will consist of ten five-hour in-service sessions. Because the AP examination requires the use of a graphics calculator and interpretation of computer output, a graphic calculator and a computer with appropriate software will be used extensively through the course. Teachers will then be able to teach a course in statistics that introduces students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Teachers will be able to: explore data, plan a study, anticipate patterns in advance, and make statistical inferences. As a result, more students will take a fourth year of mathematics; more students will be able to gain access to college-level study; students will be offered a practical tool for contemporary applications; and the course will make effective use of technology.

Western Carolina University. ***Enhancing Mathematics with Technology.*** **Ms. Deborah Britt and Dr. Ralph DeVane, Project Co-Directors. $29,640. Project Service Area: All Counties in Western Education Region.**

This course, open to all middle and high school teachers in the western education region, will focus on the graphical, analytical and numerical meaning of algebra, geometry and statistics; the course will also emphasize the appropriate uses of graphics calculators and computers in the classroom in relation to the content area. Participants will have the opportunity to use material from several curriculum reform groups. Through the course participants and their students will: understand math better; increase their abilities to solve problems and reason mathematically; increase their confidence to do mathematics; and understand the role of technology in mathematics and problem-solving through real-world applications. Through the course, participants will: become skilled in the use of graphics calculators and computers; provide them with an experience which broadens their depth of mathematical knowledge; incorporate the use of applicable statistical applications into all courses through the use of technology; and allow students the opportunity to explore business and industry applications.

Featured Sites and Teachers in Star Schools Series: "Case Studies and Applications"

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Attachment I

School Sites and Teachers Featured on the Star Schools Series Telecasts "Case Studies and Applications"

(three pages)

Program One Guests
Telecommunications

Elizabeth City/Pasquotank
Bonnie O'Neal, teacher, H.L. Trigg Elementary School

Wake County
Caroline McCullen, Computer Lab Instructor
Ligon Middle School

N.C. 1995-96 Teacher of the Year
Vernestine Taylor

Program Two Guests
Video Production

New Hanover County
Michael Zentmeyer, Principal
Wrightsboro Elementary School

Harnett County
Marie Salmon, Media Coordinator
Coats Elementary School

Charlotte/Mecklenburg
- Augie Beasley, Media Coordinator
Charlotte/Mecklenburg High School
- Karen Moore, Media Coordinator
Olde Providence Elementary School

Attachment I
School Sites and Teachers Featured on
the Star Schools Series Telecasts
"Case Studies and Applications"
(three pages)

Program Three Guests
Laser Discs and CD ROMs
September 16, 1996

Charlotte-Mecklenberg
Sandra Andrews, Media Coordinator
Oaklawn Elementary School

Wilkes County
Pinky Bumgarner, Media Coordinator
Woodward Middle School

Tom Snyder Productions
Hedrick Ellis, Director of Program Development

Program Four Guests
Multi-Media Authoring Systems

Orange County/Chapel Hill
Stephanie Hebdon, Teacher
Frank Porter Graham Elementary

Charlotte-Mecklenburg
Janice Tate, Media Coordinator
Piedmont Open School

Program Five Guests
Classroom Management

Watauga County Schools
- Lynn Coulthard, First Grade Teacher
Green Valley Elementary School
- Gail Richards, Technology Specialist
Green Valley Elementary School

Horizon Research, Inc.
Chapel Hill, North Carolina
Ruth Pershing, Consultant

Chapel Hill-Carrboro
- Shelly Heath, Science Teacher
Charles and Lucille McDougle Middle School
- Bob Stocking, Technology Specialist
Charles and Lucille McDougle Middle School

North Carolina Technology Professional Development Programs: Some Examples

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Several technology professional development programs are currently operating within the state whose expressed purpose is to improve the use of technology within public school classrooms. The following list is by no means a comprehensive nor all-inclusive list of existing technology professional development programs. However, this partial list does offer a starting point for each regional coordination structure as they begin matching assessed educators' needs to possible resources.

Programs currently offering Technology Professional Development:

Community Colleges - Most community colleges across North Carolina offer technology professional training on computer operating systems as well as at least two levels of training using word processing, spreadsheet and database programs. Many community colleges presently offer renewal credit courses for teachers in technology, while other community colleges have contract agreements with specific local school districts to provide technology professional development. For more information contact the community college continuing education office.

EastNet - EastNet, operated by East Carolina University's educational consortium, ENCCARE, is a free dialup access to the internet that was developed specifically for inservice teachers and administrators in Northeastern North Carolina. EastNet, serving public school, community college and university personnel, provides an interface and access to the internet and email service. For more information contact: Emmett Floyd (edfloyd@eastnet.educ.ecu.edu)

FIBERNET PROJECT - CAPE (Consortium for the Advancement of Public Education) in collaboration with University of North Carolina at Wilmington, Cape Fear Community College, New Hanover Regional Hospital, Hoggard High School, and New Hanover High School have developed a fiber optic network which allows real-time simultaneous video and audio interactions among the five sites. The network utilizes state of the art technology as an instructional tool to expand and integrate classroom instruction. For more information contact: Molly Sloan (sloanm@uncwil.edu)

Local Education Agencies (LEA's) - Across North Carolina local school systems offer extensive technology professional development for teachers and administrators within their school districts. Many LEA's hire experienced teachers from their district to provide basic and advanced technology staff development. Other LEA's have contracted with private vendors, community

colleges or universities to provide technology professional development for their personnel. For more information contact the LEA's central office.

MATHLINE - MATHLINE is a discipline-based educational service offered by Public Broadcasting Service (PBS). MATHLINE will offer professional development opportunities via distance learning courses, video conferences, and electronic learning forums. Currently, MATHLINE offers the PBS Middle Grades Math Project which gives participants videos of actual classroom teachers modeling effective practice, an electronic learning community with on-line coaching and biannual interactive teleconferences. For more information contact: mcom@unctv.org

North Carolina School of Science and Math - The North Carolina School of Science and Math provides professional development opportunities through interactive video coursework for high school students in fourteen counties. The School of Science and Math also provides courses for teachers to use a wide range of technologies for classroom instruction. Additional outreach offerings will be available to more teachers when the construction of a new state-of-the-art facility is completed on campus. For more information contact: John Friedrick (internet: friedrick@opus.ncssm.edu)

North Carolina Teacher Technology Academy - Developed by the North Carolina Teacher Academy, the Technology Academy provides state-wide technology professional development to create student-centered classrooms. Teams of teachers around the state participate in staff development which gives teachers hands-on experience with telecommunications and multimedia tools. For more information contact: Julia Kron (jpk@ga.unc.edu)

SCOUT (Students Constructing their Own Understandings with Technology) Camp - SCOUT Camp is a collaborative technology staff development summer institute for teachers from Chapel Hill-Carrboro School System and UNC-Chapel Hill teacher education faculty. Participants use a wide range of technologies as tools for thinking, collaborating and communicating within a project-based workshop format to improve the use of technology in classrooms. For more information contact: Marjorie DeWert (dewert@email.unc.edu) or Sheila Cory (chapel.hill@applelink.com)

Southeastern Regional Visions for Education (SERVE) - SERVE is the federally funded educational laboratory serving Alabama, Florida, Georgia, Mississippi, North Carolina, and South Carolina. SERVE provides two services for educators that utilize and promote the effective use of technology in schools. The first service is called DISC which is a free computerized

information search and retrieval service available to all educators in the southeast region. DISC staff conduct searches of computer databases and provides analyses of research topics. The second service available is SERVE-Line which is an on-line information system that educators use to access and exchange information. For more information contact: Don Holznagle at 1-800-659-3204.

TEAM - The TEAM Project provides seven counties in the Appalachian State University/Public School Partnership staff development tailored to the needs of each county in classroom applications using databases and spreadsheets. TEAM Project members also have access to the ASU computer network and internet connectivity. For more information contact: Marrion Ward (wardmw@appstate.edu)

Technology Tools For Science and Mathematics Learning - TechTools is a four-year instructional technologies project that will establish ten university training sites (four currently operate) across North Carolina, each of which will offer professional development programs for middle and high school science and mathematics teachers. TechTools trains inservice teachers to use technology to enhance active student learning; it develops modules in biology, chemistry and physics for integrating technologies into the teaching and learning process; and it uses an electronic information management system CURIE which brokers internet information useful to science and teachers. For more information contact: Jerry Meisner (jm@curie.uncg.edu) or Harol Hoffman (hh@curie.uncg.edu)

DPI Videotape Loan Library: Request Form

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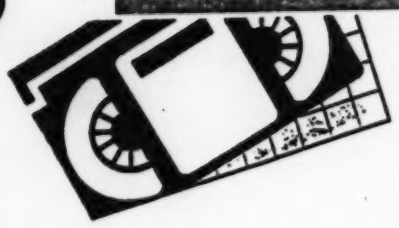

Instructional Video Programming

VHS LOAN FORM

NAME _____

SCHOOL _____

ADDRESS(UPS) _____

SCHOOLSYTEM _____

TELEPHONE _____

Please make as many copies of this form as necessary. Return to Videotape Library Distance Learning Systems, Division of Instructional Technologies, State Department of Public Instruction, 301 N. Wilmington St., Raleigh, NC 27601-2825 (Phone: 919/715-1549 Fax 919/733-4762

Program Titles	1st Choice	2nd Choice

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☐ YES ☐ NO If titles listed above are not available on any of the preferred dates, do you want them shipped when available?

Guidelines for Developing a Professional Collection

PROFESSIONAL COLLECTION

.:.GETTING STARTED.:.

- Involve teachers and/or administrators in the selection process. Survey your potential readership to see what their interests and needs are.
- Place the professional collection in a convenient location; consider branch collections in such places as the teacher's lounge or departmental offices.
- Assist your clientele in using the professional collection. Be prepared to help them with their research.
- Publish lists of new acquisitions with brief annotations.
- Arrange for periodic reviews of books and other materials by local experts, i.e., teachers and administrators.
- Arrange for available and adequate time for use of the facility--extended hours.
- Devise a system of routing new materials to staff members (see below, "Using the Journal Collection.")

.:.USING THE JOURNAL COLLECTION.:.

Simply collecting the best or most well-known journals for the professional collection does not guarantee that they will be read and used. Use of the professional collection by all staff members can be increased by a system of notification to individuals about recent acquisitions. A CURRENT AWARENESS system to keep staff apprised can take one of several forms: the Journal Approach or the Subject Approach.

.:.The Journal Approach.:.

- Publish and circulate a list of subscription titles with a "choice form" so that staff can indicate their journals. of interest. As the new journals arrive, copies of the Tables of Contents are sent to staff members.
- After patrons have indicated their interest in individual articles on the Table of Contents pages, either check out the journal to them or make a copy of the article(s) requested and send.
- If time or funds are a problem, a copy of the Table of Contents can be posted on the bulletin board in the media center, outside the central office, in the lounge, etc.

.:The Subject Approach.:.

- Solicit education topics of interest from professional staff members or use a pre-selected list of topics that are likely to be covered in the subscriptions in the collection. Assign code numbers to the topics. Circulate the "choice sheet" of topics to the staff.

- Review the journals and other materials as they are received and assign the designated code number to individual articles.

- If a database management system is available, patrons' names and subject choices can be matched to the subject code of the articles and an individualized bibliography for each subscriber generated at monthly (or other) intervals.

- If a computer management system is not an option, a simple card file by subject noting individuals who have chosen that particular topic can be maintained and used. Send a brief notice to patrons as articles are coded.

.:BUILDING THE PROFESSIONAL COLLECTION.:.

- Collect all recent examination copies of textbooks, or copies of textbooks no longer adopted by the state, to be used as supplemental curriculum materials.

- Buy inexpensive pamphlets (e.g., Phi Delta Kappan Fastbacks).

- Place all professional education books and materials together.

- Ask local organizations and civic groups to furnish appropriate materials and/or financial assistance.

- Use faculty/administrators as best sources of information: if they are taking graduate courses ask them to supply bibliographies, syllabi, etc., that might help in selecting new materials or reference materials.

- Process education materials ordered by individual faculty/administrators centrally so that borrowing locally becomes a possibility.

- Ask all professional staff to participate in a "journal exchange": if they subscribe to a professional journal(s), perhaps they would like to share with others or donate to the professional collection when they have finished reading.

- Use the new book list in the December issue of the American School Board Journal.

- Write to the Department of Education for lists and free publications.

- Check the publications lists from the Department of Public Instruction.

Technology Training Program Evaluation Form: Local Sample

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Haywood County Consolidated Schools Instructional Technology Plan

Evaluation Matrix

Goals	Strategies	Evaluation/Monitoring	Person/Responsibility	Time line
System-Wide Goals and Objectives for Teacher Competencies 1. All teachers to meet system computer competency levels and meet specific criteria to accomplish these levels including performance based assessments.	**System-Wide Strategies to Reach Goals** 1. Provide access to technology for all teachers and administrators. 2. Provide in service training for computer technologies and applications specific to teacher requirements in the classroom to meet student objectives.	1. Implementation of Technology Plan, completion of equipment installations by school. 1. Computer Competency Assessments for Teachers. 2. Completion tracking through HRMS.	1. FACT Committee, Computer Coordinator, Principal, Superintendent 1. Computer In-service Instructor	1. Report to the Board of Education Annually
2. Effective Teacher Training [illegible] incorporating technology [illegible] of the tools used by effective teachers.	1. Integrate technology classroom applications and methods into ETT as part of the standard in-service requirements for teachers, student teachers and assistant teachers.	1. Lesson Plans reviewed by Personnel In-Service Evaluator	1. Computer In-service Instructor	1. Report to the Board of Education Annually
3. Include technology goals in all School Improvement Plans	1. Promote policy to require technology goals integrated throughout School Improvement Plans.	1. Curriculum and Instruction Committee annual review of SIPS	1. Associate superintendent of Curriculum	1. Report to the Board of Education Annually
4. Effective manage and communicate student data and grades to parents and students via the use of technology.	1. Promote the purchase and use of Integrade and on-line SIMS access for teachers. 2. Provide in-service for the use of these data management programs.	1. Implementation of Technology Plan, completion of equipment installations by school.	1. Principal, SIMS/Computer Coordinator, Computer In-service Instructor	1. Report to the Board of Education Annually